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ABSTRACT

Papers in this special issue of "Speech Monographs" focus on the communicative aspects of conflict as an important but neglected area of research. John Waite Bowers introduces the publication with "Beyond Threats and Promises," while David W. Johnson analyzes conflict literature in the longest paper, "Communication and the Inducement of Cooperative Behavior in Conflicts: A Critical Review." Additional papers include the following: "An Analytic Model of Conflict" by Charles E. Watkins; "Conciliation and Verbal Responses as Functions of Orientation and Threat in Group Interaction" by Theodore Jon Marr; "The Effects of Substantive and Affective Conflict in Problem-Solving Groups" by Mae Arnold Bell; "Communication in Game Simulated Conflicts: Two Experiments" by Thomas M. Steinfatt, David R. Seibold, and Jerry K. Frye; "Argument in Negotiation: A Theoretical and Empirical Approach" by Nancy A. Reiches and Harriet B. Harral; "Perceiving Communication Conflict" by Thomas J. Saine; and "A Literary Analog to Conflict Theories: The Potential for Theory Construction" by Lawrence J. Chase and Charles W. Kneupper. (JM)

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Speech Monographs

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VOLUME 41 MARCH 1974 NUMBER 1

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One of the major criticisms of conflict models has been that they fail to include such communication terms as threats, promises, credibility, and messages. This paper details an analytic model of the conflict situation which defines these terms with action alternatives, value and perception functions, and termination expressions. The utility of the model is demonstrated by the inclusion of new concepts, the description of a fictional conflict, and the deduction of new relationships among a set of axioms.

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GUEST EDITOR'S INTRODUCTION: BEYOND THREATS AND PROMISES

IN May 1973 I was invited to deliver a lecture at Bowling Green State University in Ohio. That was a year after the SCA Research Board had sponsored a conference for ten participants on "The Role of Communication in the Process of Conflict." The book resulting from manuscripts discussed at the conference was in preparation. (Its publication by Prentice-Hall under the editorship of Herbert Simons and Gerald Miller is now impending.) The research Board had sponsored, and I had organized and chaired, a special competitive program on communication and conflict at the annual SCA convention the previous December. This special issue of *Speech Monographs* had been generously authorized by editor Thomas Scheidel and had just been announced. I and a few others were offering courses for graduate students on communication and conflict. All these activities were designed to stimulate interest among scholars, especially young scholars, in what some of us perceived to be a neglected but important area for the kind of research and theory at which we should be expert.

Before I prepared my Bowling Green lecture, I decided on a title—"Beyond Threats and Promises"—because I had noted that theorists of conflict in general seldom attend to communicative behaviors other than messages that clearly fit into those two categories. (To give credit where it ought to be given, I must note that James Tedeschi writes also of "mendations" and "warnings.") Having made up a title, I could begin my preparation, and I commenced to scan my environment for clues.

I decided to begin from the definitions of threat and promise that are most widely accepted among conflict theorists. Imagine two parties to conflict, Archer and Target. A threat exists when one (say, Archer) predicts that he will impose negative sanctions on the other, these sanctions to be contingent on some behavior of the other. A promise simply changes the sign of the sanction: Archer predicts that he will deliver positive sanctions to Target contingent on some behavior of Target's. A threat or a promise, then, to be credible and unambiguously identifiable, would require:

1. that Target's behavior is somehow relevant to Archer's value position, and Target knows it;
2. that Archer, at least under certain circumstances, has control of negative or positive sanctions for Target, and Target knows it;
3. that Archer is able to impose those sanctions, and Target knows it;
4. that Archer is willing to impose those sanctions, and Target knows it;
5. that Archer sends a message to Target indicating Archer's intent to impose those sanctions contingent on Target's behavior.

(This list of characteristics is less complicated than John Searle's analysis of promises, but it obviously owes something to him.)

What did my environment tell me? My first observation was that both parties to conflict in everyday life often control both kinds of sanctions for each other and that the behavior of parties in conflict is best explained by their taking account of both rewarding and punishing contingencies. But English (for one) has no word to characterize a message expressing such a double contingency. So I invented one: "thromise."

My second, and most interesting, observation was that adults in this culture rarely promise explicitly and even more rarely threaten explicitly. In the two or

three weeks of my observation, I neither witnessed nor was party to a single message formally marked as a prediction of rewarding or punishing sanctions under the control of an Archer to be delivered contingent on the behavior of a Target. (It should be noted well that we have no very young children in our home.) Definitional condition (5) was never met. It is as though we have agreed not to say what we mean. Yet, during the period of observation I clearly witnessed (and was party to) situations where Targets behaved as if threats, promises, and thromises had been delivered to them by Archers. Somehow, we frequently understand threats, promises and thromises even though, outside legal and religious structures, we seldom say them or hear them.

How? I speculated at Bowling Green that Target will perceive a threat, promise, or thromise if definitional conditions (1-4) are met. I said then that condition (5) is redundant. I have since changed my position slightly. I now think that some message is necessary (or, at least, customary), but that if conditions (1-4) are met almost any message, including a grunt, a groan, or a grimace, will serve. We do not speak metaphorically, I think, when we use terms like "threatening person" and "promising situation." The threat, the promise, or the thromise is in the interaction of Archer/Target's situations and Archer/Target's persons. If Archer sends no message exploiting that interaction, Target will supply one. Among adults in this culture, communication of threats and promises is in general tacit, to employ Thomas Schelling's term, enthymematic, to employ Aristotle's. The situation and persons of Archer and Target provide the premises for the pragmatic enthymeme. Target has no problem drawing the conclusion. When we do send threatening, promising, or thromising messages, their form is likely to be anything but a prediction. We equivocate ("I might like it if you . . ."), ambiguate ("Isn't there something you can do . . . ?"), and disclaim responsibility for consequences ("I don't see how I could do anything but leave home if you . . ."). Form does not match function.

How do we get that way? Our small children are not at all reluctant to meet condition (5), to make explicit threats, promises, and thromises. I think the answer is that we learn in this culture to value our interpersonal independence (or, for us cynics, our illusion of interpersonal independence) above almost all else. Erving Goffman would say that it has something to do with our definition of "character." To act on the basis of *formally expressed* threats, promises, and thromises is to be controlled by others, and we claim not to be controlled by others. We make some kinds of threats (extortion, blackmail) and some kinds of promises (attempted bribery) illegal, and we freely apply the labels for those illegal acts to other formal threats, promises, and thromises. To act on the basis of *tacit* threats, promises, and thromises, on the other hand, is to be free, and we like to be able to claim that we are free even if maintaining that claim requires us to conform to the unexpressed (and possibly misperceived) wishes of powerful others.

In such a system the formal expression of threats, promises, and thromises becomes not only unnecessary but disfunctional. An explicit threat, promise, or thromise works against its author's manifest intention. We learn not to be Targets and not to take aim. Our villains threaten and promise. Our heroes' defiant actions speak louder than their words.

A number of interesting research ques-

tions arise from this analysis. Among them:

1. Is the expression of threats, promises, and thromises more common interpersonally in cultures whose theory is authoritarian and hierarchical than in cultures whose theory is democratic and egalitarian? The analysis implies that the answer is "yes."
2. Is the expression of threats, promises, and thromises a curvilinear function of interpersonal power? The analysis suggests that those who are very powerful have no need for formal threats, promises, and thromises, and that those who are powerless cannot make credible threats, promises, and thromises. The prediction is that the most common such expressions emanate from those who have power in a middle range.
3. Does the expression and perception of threats, promises and thromises vary with personality types? Dogmatism (see Steinfatt, Seibold and Frye's paper in this issue), machiavellianism, and externality-internality might be promising types to pursue.
4. Do predicted punishments (threats) and predicted rewards (promises) behave additively when they are combined in thromises? If they behave nonadditively, are personality types relevant to the way they function on each other? The analysis makes no prediction about the answer to this question, but the question is interesting anyway. Is there a personality type for whom the salience of reward (opportunity) is more potent than the salience of cost (risk) in a thromising situation, and is there an obverse personality type? If such personality types exist, what are the implications for communicative behavior? A doctoral student at Iowa, Catherine Konsky, is pursuing such questions in her dissertation. The personality variable specifically of interest to her is success seeking/failure avoiding, together with difficulty of topic and power position, as predictors of verbal behavior.

Now, about this special issue. I had hoped that it would be filled with papers ingeniously manipulating and analyzing the communicative behavior of parties to conflict. It is not. David Johnson's analysis of the communicative shortcomings in conflict theory is nearly as accurate after this issue as it was before. The most common communication variable treated by the authors represented here is, as it has been among conflict scholars for more than two decades, simple opportunity to communicate, rather than form and function of specific communicative behavior. But the situation is promising. Most authors explicate communicative implications of their results, and one might hope that they will soon test those implications. A few studies more explicitly testing hypotheses about communication and conflict have been done but are not yet ready for publication. Mae Arnold Bell, in a study briefly reported, has extended Theodore Marr's method so that conclusions can be drawn about the production, not simply the choice, of messages by subjects in potentially conflictful situations. Her dependent variables are message variables. Gerald Miller and Thomas Steinfatt note the potential of Steinfatt's Creative Alternative game for the generation and testing of hypotheses about messages. Knowing the research habits of those two scholars, I do not doubt that the potential will expeditiously be made kinetic. Studies of communication in conflict will soon become so common, I predict, that future special issues on the subject would be gratuitous.

I want to acknowledge the contribution of two individuals not mentioned elsewhere in the issue. Samuel L. Becker edited one manuscript. But he owed me a favor. Eleanore Bowers, with no thromises explicit or tacit, displayed an unexplainable but not unprecedented tolerance for vagaries in the editor's temperament and work habits occasioned by this enterprise and others. I have already thanked the authors privately for putting up with my free editing and authoritarian ways specific to a crisis situation. I now thank them publicly.

—John Waite Bowers

SPEECH MONOGRAPHS

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AN ANALYTIC MODEL OF CONFLICT

CHARLES E. WATKINS

CONCEPTS find expression only through patterns of symbols; thus models provide researchers with handles on reality. But most conflict analysts would insist that a useful model is more than a conceptual framework for organizing physical phenomena: it is also a theoretical formulation for postulating relationships and predicting observable events. And for quantitative purposes, it is also desirable for the model to utilize a closed symbol system which preserves the important relationships among the referents. Such models are termed analytic and are commonplace in the physical sciences. For example, the formula $PV = kT$ is an analytic model for certain properties of an ideal gas, so that if P represents pressure, V volume, T temperature, and k a constant, then an increase in pressure (P) must result in an increase in temperature (T) or a decrease in volume (V). The formula's algebraic properties correspond to the physical properties of the gas.

This monograph outlines an analytic model of conflict with a special emphasis on the role of communication. Because the purpose of a model is to simplify complex phenomena, it is inevitable that certain elements of conflict are omitted. Every effort has been made to include those closely related to communication.[1] Most of the essential conditions of conflict as reported in the literature have been included, as summarized in the following axioms:[2]

1. Conflict requires at least two parties capable of invoking sanctions on each other.
2. Conflicts arise due to the existence of a mutually desired but mutually unobtainable objective.
3. Each party in conflict has four possible types of action alternatives:
   a. to obtain the mutually desired objective,
   b. to end the conflict,
   c. to invoke sanctions against the opponent,
   d. to communicate something to the opponent.
4. Parties in conflict may have different value or perceptual systems.
5. Each party has resources which may be increased or diminished by implementation of action alternatives.

[1] Although communication takes place on many levels and in countless settings, one of the most interesting contexts of the communication act is in a conflict situation. Regardless of whether the conflict is interpersonal or international, certain terms and elements remain important. Among these are threats, policies, messages, credibility, and reliability. Certainly there are more, but this paper claims only to describe a model accounting for those most often present.

[2] The axioms have been selected from the essential properties of conflict advanced by Raymond W. Mack and Richard C. Snyder, "The Analysis of Social Conflict—toward an Overview and Synthesis," *Journal of Conflict Resolution*, 1 (1957), 212-248.

Mr. Watkins is a doctoral student in the Department of Speech Communication at the University of Texas at Austin and is presently seeking post-doctoral employment.

6. Conflict terminates only when each party is satisfied that it has 'won' or 'lost' or believes that the probable costs of continuing the conflict outweigh the probable costs of ending the conflict.

An implicit assumption is that all parties behave rationally, because it is only to the extent that actions are consistent and predictable that any model is of use—for to speak of a rational model is pleonasm; to speak of an irrational model is oxymoron.

The Symbolic Representation of the Elements of Conflict

The first axiom postulates the existence of two parties with potential sanctions against each other. Although the model could be modified to admit the existence of more than two parties to the conflict, that extension would compound the complexity of notation without correspondingly enriching the theory. The sanctions available to a given party are represented by the set

$$[S_i^1, S_i^2, \ldots, S_i^n],$$

where the superscript distinguishes between individual sanctions in the arsenal. Rewards are the same as sanctions except that they have positive value to the recipient.

The second axiom stipulates the existence of an object for the conflict, something each party desires, but which both cannot have. This does not entail that the object is the same for both parties, but rather that both parties cannot simultaneously realize their objectives. Nor does this imply that conflict will continue only until one party can obtain the objective for himself, because goals may be redefined as the conflict evolves. Nor may it be presumed that either of the conflicting parties will obtain the object, for sometimes both sides agree to cease hostilities before either can attain his objective. The action of party i achieving his objective is represented by the symbol O_i, and employing the mathematical convention of appending the (′) marker to negate the meaning of a symbol, O_i' stands for the failure of party i to achieve his objective.

Third, the action alternatives open to party i are represented by the set $[O_i, O_i', T, T', S_i^1, \ldots, S_i^n, C_i(e)]$, where O_i represents the attainment of the mutually desired objective, T represents the termination of the conflict, $(S_i^1, \ldots, S_i^n)$ stands for the group of sanctions available to party i, and $C_i[e]$ represents the communication by party i of an expression e, which may be a statement of fact, intent, or condition.

The fourth axiom declares that the conflicting parties may have differing value or perceptual systems. This may be introduced into the model by means of two functions $V_i(X)$ and $P_i(X)$. $V_i(X)$ represents the value of X to party i in some unit of value, so that values possess all of the mathematical properties of the real number system, such as addition, subtraction, and order. $P_i(X)$ represents the perception of X by party i, giving a perception the same role as the object perceived, so that a perceived value has the properties of a value, a perceived action has the properties of an action, and so forth. The model makes use of a third function, so it is probably wise to introduce it here. This is the well-known probability function p. Thus, p(X) represents the likelihood of X by a real number between 0 and 1. It is possible for X to be an action, a perception, a value, or a conditional of the form $A \rightarrow B$, meaning "A will result in B" or "if A, then B." This makes it possible to represent contingent policies by statements such as $S_i \rightarrow S_j$, which states that sanction S_i will be met by sanction S_j.

The fifth axiom states that the parties have resources which may be affected by

the actions of either antagonist. The amount of resources available to party i is represented by r_i and is expressed in the same units as the value function for that party. Gain or loss of the objectives, termination or continuation of the conflict, or the deployment of a sanction or reward may effect the resources of both parties, so that the value of a sanction is the change in resources it produces. For example, a sanction which does great damage to an opponent's resources may require the expenditure of the resources of the sanctioner in order to manufacture and deliver the weapon. Note also that the continuation of the conflict may be of benefit to one or perhaps both parties. Communications do not have intrinsic value, but may cause benefits or detriments indirectly by eliciting action replies. To be threatened does not entail direct cost, but to honor the threat or to prepare defenses might.

So far the actions available to both sides have been defined, certain operations on the actions have been expressed as functions, and a notational scheme for representing each has been described. The final axiom stipulates the limits within which these variables may be manipulated by the definition of three expressions which determine the condition for termination of the conflict. The first two are intuitively obvious—a party will cease to fight when it has obtained all that it can from the conflict or when it concedes that there is nothing that can be done to improve its position. These conditions are dynamic in that both parties may continually revise their 'win' and 'lose' expressions, W and L, but at any moment both will be defined and available to at least that party for comparison with the situation at that time.

The third condition for terminating the conflict is really a generalization of the first two, the belief that the probable costs of continuing the conflict outweigh the probable costs of terminating the conflict. The grounds for this 'quit' condition originate in the central hypothesis of decision theory[3]—that conflicting parties will strive to maximize their expected utility. When confronted with the decision to quit or to pursue one of the action alternatives, a party compares the expected utility of termination [p(T)V(T)] with that of the alternative [p(T′)V(T′)], and chooses the larger figure. The problem of evaluating V(T) is solved by use of the other terminal conditions, W and L, in place of T. This gives an expression of the form p(W)V(W) + p(L)V(L) + p(T′)V(T′) dependent in value on the estimated probabilities and values of victory, defeat, and the various strategic options.

Thus the axioms may be rewritten symbolically:

1. There exist at least two parties such that for each party i, there exists the set $[S_i^1, S_i^2, \ldots, S_i^n]$.
2. There exist O_i and O_j such that $O_i \rightarrow O_j'$ and $O_j \rightarrow O_i'$.
3. For each party i, there exists ${}_tO_i$, O_i', T, T′, $S_i^1, \ldots, S_i^n$, $C_i[e]$].
4. For each party i, there exists V_i such that $V_i(X)$ is a real number, and P_i such that $P_i(X)$ has the same axiomatic properties as X.
5. There exists for each party i, an r_i such that if $V_i(X)>0$, then X increases r_i.
6. T if and only if for each party i, W_i, L_i, or Q_i is satisfied.

An example illustrates the use of this symbol set:

At the big poker game in Lilly's Gruesome Gulch Saloon, the Two Gun Kid [party k] and Black Bart [party b] sit down to play for stakes of $50 in antes and the pleasure of a drink with Miss Lilly. Bart has an eye for Lilly [$V_b(O_b)$ = $100], who slips $20 out of his money pouch

[3] For a fine resume of the works of the decision theorists see Ward Edwards, "Behavioral Decision Theory," *Annual Review of Psychology*, 12 (Palo Alto: Annual Reviews, Inc., 1961), 473-498.

every time he bets [$V_b(T') = -\$20$], but the Kid is pure in heart [$V_k(O_k) = \$50$]. Each has the options of grabbing the stakes [O_i], betting [T'], folding [O_i'], various raises [$S_i^1, \ldots, S_i^n$] or palavering [C[e]]. Bart starts with $500 cash after his $25 dollar ante [$r_b = \$500$]; the Kid has $250 in gold dust and his pappy's false teeth worth another $50 [$r_k = \$300$]. The Kid needs $500 to pay off the mortgage on his ranch [W_k: $r_k = \$500$], but won't play if he loses his pappy's teeth [L_k: r_k = teeth']. Bart wants Lilly and the antes plus the Kid's gold [W_b: $r_b = \$800 +$ Lilly], but couldn't care less about the teeth [V_b(teeth) = $0]. Bart will quit the game before losing his grubstake [L_b: $r_b = \$200$].

After the draw, Two Gun grins as he holds aces and eights [$P_k(p(W_k) = .60$]. Bart drawls, "Kid, I gotcha [$C_b[p(W_b) = 1]$]," but thinks to himself that his three jacks might not be good enough [$P_b(p(W_b) = .75)$]. The Kid stays in [Q_k: $(.60)(\$25a) + (.40)(-\$25a) = \$5$]. So does Black Bart [$Q_b$: $(.75)(\$75 = \$25a +$ Lilly$) + (.25)(-\$25a) = \$50$].

Communication within the Context of the Analytic Model

The power of a model is reflected in its ability to account for phenomena outside its original domain, and the test of an analytic model is its capacity to represent new concepts and relationships with the original symbol set and to deduce new relationships among the original concepts. In this final section, the utility of the present model is described and illustrated in both of these respects.

The scholar interested in conflict is probably concerned with several of these terms:[4] message, threat, promise, honesty, reliability, credibility. Each of these can be conveniently represented within the framework advanced in the previous section. A *message* is a communication and is easily expressed as the term e in the communication action defined in axiom (3), C[e]. A message which asserts that party i has available a sanction which will diminish the resources of party j by one hundred units would be $V_j(S_i) = -100$ and the act of communicating that message would be $C_i[V_j(S_i)] = -100$. A *threat* is the communication of a conditional sanction—i.e. S_i will result in the event of some condition, say the acquisition of the objective by party j: $C_i[O_j \rightarrow S_i]$. Implicit in the notion of a threat is at least a potential harm to the threatened under certain conditions, so that the value of the sanction, $V_i(S_j)$, is negative. *Promises* work the same way as threats, except the sanction has an implicit positive value, so that if reward S_i were available to party i, he might offer it in return for being allowed to attain his objective: $C_i[O_i \rightarrow S_i]$. A party's *reliability* is the likelihood that what he is saying is true, expressed by $p(C_i[X] \rightarrow X)$. His *honesty* is the probability that he believes what he says: $p(C_i[X] \rightarrow P_i(X))$. His credibility is his reliability as perceived by his opponent: $P_j(p(C_i[X] \rightarrow X))$. This portrays *credibility* in terms of a statement, its likelihood of being true, and the way it is understood by the other party. Thus several familiar communication terms can be isolated within the framework of the model.

The new terms fit in turn into the model. A party to conflict may calculate whether to honor a threat by considering the potential damage if the threat is carried out and the likelihood that the opponent will actually do as he says. This yields an expression of the form: $[V_i(S_j)][P_i(p(C_j[X \rightarrow S_j] \rightarrow (X \rightarrow S_j)))]$. This makes it clear that the threatener will seek to alter his opponent's perceptions about his own reliability, perhaps by additional messages aimed at convincing his opponent that he means what he says or by invoking other threatened sanctions or fulfilling promises to demonstrate a high credibility. Or he may seek to enhance the effectiveness

[4] In fact, the major criticism of the decision models has been their inability to account for these communication terms. Schelling and Rapoport in particular have solicited accounts for threats, promises, and commitments.

of his threat by persuading his opponent that the damage threatened would be an intolerable loss against the potential gain. But there are also costs in carrying out a threatened sanction, so figuring in $V_j(S_j)$: $[V_i(S_j) + V_j(S_j)][P_i(p(C[X \rightarrow S_j] \rightarrow (X \rightarrow S_j)))]$. Now a counterthreat of the form $C_i[S_j \rightarrow S_i]$ is seen to reduce the effectiveness of the threat by simultaneously increasing $V_j(S_j)$ and lowering the probability of the original threat by means of the deterrent value of the counterthreat.

Meanwhile in Gruesome Gulch, Two Gun Kid makes the first bet of \$50 [S_k^1; $V_b(S_k^1) = -\$50$]. Bart eyes the glittering gold and sneers, "I think yer bluffing [$C_b[P_b(C_k(W_k) \rightarrow W_k) = 0)]$]." and bets \$100 [S_b^1; $V_k(S_b^1) = -\$100$]. The Kid looks at his cards and raises another \$50 [S_k^2; $V_b(S_k^2) = -\$150$]. Black Bart raises back \$100 [S_b^2; $V_k(S_b^2) = -\$150$] and growls, "Raise agin an' I'll double it agin [$C_b[S_k^3 \rightarrow S_b^3$; $V_k(S_b^3) = 2{*}V_b(S_k^3)$]], 'cause there's a thousand more in my pouch [$C_b[r_b = \$1000]$]." Lilly is now \$40 richer [$V_b(T') = -\$40$].

In general, if a party to conflict considers all possible actions by both himself and his opponent which bear on his resources, his Q-expression will become: $Q_i = p(W_i)V_i(W_i) + p(L_i)V_i(L_i) + p(T')V_i(T') + p(S_i)V_i(S_i) + p(S_j)V_i(S_j)$. Thus the process of conflict becomes the manipulation of these expressions by both parties by means of the action alternatives available to each. Both sides must estimate the probable actions, perceptions, and values of the opponent in order to achieve victory.

Back at the poker game, the Kid's bankroll is shot [$r_k = \$100 +$ teeth] and he thinks he is beaten [$P_k(p(W_k) = .20)$]. If he folds, he loses \$175 [Q_k: (0)(\$275) + (1)(−\$175 = −\$25a−\$50b −\$100c) = −\$175], and if he calls he's not much better off [Q_k: (.20)(\$275) + (.80)(−\$275 = −\$25a−\$50b−\$100c−\$100d) = −\$165]. Bart is sitting easy [Q_b: (.75)(\$325 = \$25a+\$50b+\$100c +\$100d + Lilly) + (25)(−\$275 = −\$25a−\$50b− \$100c−\$100d) + (1) (−\$40) = \$135] until he hears the Kid say, "I'll see your hundred [S_k^3; $V_b(S_b^3) = -\$100$] and I'll raise you my pappy's teeth [S_k^4; $V_b(S_k^4 = -\$50$]."

Bart knows the Kid is a good judge of cards [$P_b(P_k(W_k) \rightarrow W_k)$] and that he holds his pappy's teeth in high regard [$P_b(V_k(\text{teeth}) = \$50)$] so he figures the Kid for a winner [$P_b(p(W_k) = .90)$]. As he removes Lilly's hand from his money pouch [$P_b(V_b(T) = \$20)$], Black Bart grumbles, "What's the use? [Q_b: (.10)(\$275) + (.90)(−\$325) + (1)(−\$60) = −\$325]. I'll fold [Q_b: (0)(\$325) + (1)(−\$275) + (1)(−\$40) = −\$315]." And so as the game ended [T], the Two Gun Kid saved his ranch [W_k], Black Bart returned to the hills [L_b], and Miss Lilly drank alone.

By representing some of the most important terms outside those which were built into the model, and by demonstrating new relationships among its elements, this analytic model has been demonstrated to be a useful and powerful method for approaching the study of conflict. This is not to say that it cannot be refined and expanded for different foci, but indeed is to justify its further use by analysts of conflict.

CONCILIATION AND VERBAL RESPONSES AS FUNCTIONS OF ORIENTATION AND THREAT IN GROUP INTERACTION

THEODORE JON MARR

LEWIS COSER, in formulating Georg Simmel's classic, *Conflict* and *The Web of Group-Affiliations,* into specific propositions, provided anchoring points for much of the present research on social conflict.[1] Simmel's central thesis is that "conflict is a form of socialization" which "means . . . no group can be entirely harmonious, for it would then be devoid of process and structure."[2] One of the major themes developed by Coser and Simmel is in-group conflict and group structure stabilization.

Many researchers have investigated the variables which lead to the stabilizing outcome, or the consequent consensual situation: size of group,[3] socioeconomic background, aesthetic preference,[4] and the amount of talking by members of the group.[5]

Discussion often is used to resolve group conflict. Thomas and Fink demonstrated that there is a trend toward unanimity during problem-solving discussion.[6] In this study I am particularly concerned with the relationship between message variables in a conflict-producing situation and the consequent conciliatory behavior exhibited by members of the group working toward consensus.

A theoretical solution can be derived from Thibaut and Kelley's psychology of social groups.[7] They posit that both group discussion and group problem-solving are cost and reward processes. Their basic proposition is that when two or more people interact, each elects to behave in a way which will provide him with the greatest reward and least cost. Any behavior is both potentially rewarding and costly.[8] Thibaut and Kelley have also incorporated Heider's attribution theory in this reward and cost paradigm to explain how prior in-

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[1] Lewis Coser, *The Functions of Social Conflict* (Glencoe, Ill.: Free Press, 1956); Georg Simmel, *Conflict,* trans. Kurt H. Wolff and *The Web of Group-Affiliations,* trans. Reinhard Bendix (Glencoe, Ill.: Free Press, 1955).

[2] Coser, p. 31.

[3] A. Paul Hare, "A Study of Interaction and Consensus in Different Sized Groups," *American Sociological Review,* 17 (1952), 261-267.

[4] Albert John Lott, "Group Composition, Communication, and Consensus: An Investigation According to Newcomb's Theory of Communication," Diss. University of Colorado 1958.

[5] Robert F. Bales, "The Equilibrium Problem in Small Groups," in *Working Papers in the Theory of Action,* by Talcott Parsons, Robert F. Bales, and Edward A. Shils (Glencoe, Ill.: Free Press, 1953), pp. 111-161; Bernard M. Bass, "An Analysis of the Leaderless Group Discussion," *Journal of Applied Psychology,* 33 (1949), 527-533; Bobbie Norfleet, "Interpersonal Relations and Group Productivity," *Journal of Social Issues,* 4, No. 2 (Spring 1948), 66-69; Henry W. Riecken, "The Effect of Talkativeness on Ability to Influence Group Solutions of Problems," *Sociometry,* 21 (1958), 309-321; Richard L. Lucas and Cabot L. Jaffee, "Effects of High-Rate Talkers on Group Voting Behavior in the Leaderless-Group Problem-Solving Situation," *Psychological Reports,* 25 (1969), 471-477; Cabot L. Jaffee and Richard L. Lucas, "Effect of Rates of Talking and Correctness on Decision on Leader Choice in Small Groups," *Journal of Social Psychology,* 79 (1969), 247-254; Edwin J. Thomas and Clinton F. Fink, "Models of Group Problem Solving," *Journal of Abnormal and Social Psychology,* 63 (1961), 53-63.

[6] Thomas and Fink, 53-63.

[7] John W. Thibaut and Harold H. Kelley, *The Social Psychology of Groups* (New York: Wiley, 1959); Harold H. Kelley and John W. Thibaut, "Group Problem Solving," in *The Handbook of Social Psychology,* ed. Gardner Lindzey and Elliot Aronson, 2nd ed. (Reading, Mass.: Addison-Wesley, 1969), IV, 1-101.

[8] Thibaut and Kelley, pp. 100-125.

formation is a determinant of the consequent behavior adopted to maximize reward.[9] Using the prisoners' dilemma game, they showed that information is crucial to a person's success in adapting to situations of outcome dependence. An individual is said to be informationally dependent on another if the other person can raise his stability of attribution to a higher level than he can attain from alternative information sources. Furthermore, Morton Deutsch, using the prisoners' dilemma game, substantiated that opportunity to communicate increases the tendency to choose cooperatively.[10]

Two key sets of variables seem to have been suggested by these researchers: (1) group member variables—evaluative dispositions, size, personality, cohesiveness of the group, and (2) communication variables.

Orientation and Threat Statements

Previous research by Bales and Strodtbeck suggests that two types of statements are of particular importance in group communication, orientation statements and threat statements.[11] Threat also has been found by Deutsch and Krauss to be an important factor in interpersonal bargaining.[12]

In the present study, high orientation verbal behavior is defined as a verbal statement which includes one of the following: (1) a procedural suggestion with a relevant fact to resolve conflict, or (2) a new fact relevant to an earlier procedural suggestion. Low orientation verbal behavior is a verbal statement which does not include either (1) or (2).

I have defined high threat verbal behavior as a verbal statement which reflects the unwillingness of the source to consider other alternatives and which includes words of antagonism toward other individuals or toward their ideas. Low threat verbal behavior is a verbal statement which does not express the source's unwillingness to consider other alternatives and which does not include words of antagonism toward other individuals or their ideas.[13]

Thibaut and Kelley's theoretical rationale provides reasons to postulate that an individual's conciliatory behavior is affected by the information variables in a consensus-seeking discussion. From the Gouran, Knutson, and Kline studies we learn that high orientation verbal behavior facilitates conciliatory behavior in a consensus-seeking situation.[14] Studies by Leathers, Bales, Scheidel and Crowell, and Guetzkow and

[9] Kelley and Thibaut, 10-13.

[10] Morton Deutsch, "The Effect of Motivational Orientation Upon Trust and Suspicion," *Human Relations*, 13 (1960), 123-139.

[11] Bales' Interaction Process Analysis was first published in Robert F. Bales, *Interaction Process Analysis: A Method for the Study of Small Groups* (Cambridge, Mass.: Addison-Wesley, 1950). For his later version and other related studies see Robert F. Bales, "The Equilibrium Problem," in *Personality and Interpersonal Behavior*, by Robert F. Bales (New York: Holt, 1970). For an interesting example of the use of Bales' IPA to test group variables see Raymond A. Katzell, Charles E. Miller, Naomi G. Rotter, and Theodore G. Venet, "Effects of Leadership and Other Inputs on Group Processes and Outputs," *Journal of Social Psychology*, 80 (1970), 157-169.

[12] Morton Deutsch and Robert M. Krauss, "The Effect of Threat Upon Interpersonal Bargaining," *Journal of Abnormal and Social Psychology*, 61 (1960), 181-189.

[13] In the study by James C. McCroskey and David W. Wright, "The Development of an Instrument for Measuring Interaction Behavior in Small Groups," *Speech Monographs*, 38 (1971), 335-340, the six factors are: orientation, tension, flexibility, relevance, interest, and verbosity. Tension and flexibility combined connote the idea of threat.

[14] Dennis S. Gouran, "Variables Related to Consensus in Group Discussion of Questions of Policy," Diss. University of Iowa 1968. A condensation of this dissertation appeared in *Speech Monographs*, 36 (1969), 387-391. Thomas J. Knutson, "The Influence of Orientation Behavior on Reaching Small Group Consensus," paper presented at the annual Western Speech Association Convention, Fresno, Calif., November 22-24, 1971; John A. Kline, "Indices of Opinionated and Orienting Statements in Problem-Solving Discussion," *Speech Monographs*, 37 (1970), 282-286, and "Orientation and Group Consensus," *Central States Speech Journal*, 23 (1972), 44-47.

Gyr consistently show that tension and negative emotions usually are followed by periods of confusion, disorientation, and member dissatisfaction.[15] Deutsch and Krauss found that threat reduces the likelihood of two individuals cooperating. In other words high threat verbal behavior in a discussion should reduce the amount of conciliatory behavior.

On the basis of these previous experimental studies, three predictions were developed to be tested in this study:

1. In a consensus-seeking context, there is an interaction between orientation and threat. Orientation has a greater effect on conciliatory behavior when there is low threat than when there is high threat behavior in the group.
2. High orientation verbal behavior evokes a greater degree of conciliatory behavior than low orientation behavior in a consensus-seeking context.
3. Low threat verbal behavior evokes a greater degree of conciliatory behavior than high threat verbal behavior in a consensus-seeking context.

From Thibaut and Kelley's theoretical rationale it can be reasoned that an individual will conform to those information behaviors which maximize the probability of high reward. Because the combination of high orientation and low threat verbal behavior is predicted to evoke the greatest amount of conciliatory behavior, regardless of the verbal behavior of the other members of the group, an individual will tend to respond with high orientation and low threat statements.

[15] Dale G. Leathers, "Process Disruption and Measurement in Small Group Communication," *Quarterly Journal of Speech*, 55 (1969), 287-300; and "Testing for Determinant Interactions in the Small Group Communication Process," *Speech Monographs*, 38 (1971), 182-189; Thomas Scheidel and Laura Crowell, "Feedback in Small Group Communication," *Quarterly Journal of Speech*, 52 (1966), 273-278; Harold Guetzkow and John Gyr, "An Analysis of Conflict in Decision-Making Groups," *Human Relations*, 7 (1954), 367-382. See also Bales, *Interaction Process Analysis*.

On the other hand, Deutsch and Krauss found that "if a person uses threat in an attempt to intimidate another, the threatened person . . . would feel hostility toward the threatener and tend to respond with counterthreat and/or increased resistance to yielding."[16] On the surface, this seems to predict the opposite of what Thibaut and Kelley's theory would. Consideration of the nature of threat renders the apparent discrepancy insignificant. Threat, as it is applied in different situations, can be of different degrees. The relative strength or weakness of a threat depends on the threatened person's internalization as well as on the particular threat element used. Whether the person will respond with counterthreat depends on whether high threat also reduces conciliatory behavior. In other words, a prediction about the individual's threat response has to be consistent with the prediction about his conciliatory response. If prediction 3 is valid, the individual in a high threat condition will respond with greater threat than the one in a low threat condition. Thus, predictions 4, 5, 6 and 7 would follow:

4. The interaction between these two independent variables, orientation and threat, is such that the descending order of their effects in evoking orienting behavior in a consensus-seeking context is: high orientation-low threat, low orientation-low threat, low orientation-high threat, high orientation-low threat. There is no basis for predicting a main effect of orientation conditions on orientation responses or threat responses. Therefore, no prediction is made for these variables.
5. If prediction 3 is tenable, the overall high threat condition evokes less orienting behavior from the naive subject than does the overall low threat condition.
6. The interaction between these two independent variables, orientation and threat, is such that the descending order of their effects in evoking threat behavior in a con-

[16] Deutsch and Krauss, 182.

TABLE 1
REWARD SCHEDULE

Letter:	R	O	Y	G	B	P
Reward:	$1.35	$1.10	$0.85	$0.60	$0.35	$0.10

sensus-seeking context is: high orientation-high threat, low orientation-high threat, low orientation-low threat, high orientation-low threat.

7. If prediction 3 is tenable, the overall high threat condition evokes more threatening verbal behavior from the naive subject than does the overall low threat condition.

No prediction was made about the effect of sex, but since it was controlled a test of its effect was made.

DESIGN AND PROCEDURE

The central idea was to construct an experimental design which would simulate a group discussion in which the discussants had apparent opinions and were trying to achieve consensus. They were given the illusion that they were exchanging previously written notes to try to arrive at consensus and, in so doing, they anticipated being rewarded with money. The monetary reward was intended to be a manipulated analogue of the pressures which cause individuals to discuss and move toward consensus. Though it was introduced externally, it was not external coercion.

The experimental sessions were arranged so that four naive subjects, strangers to each other, arrived at the same time. They were seated in front of a semicircle of partitioned booths, with the experimenter at the center of the semicircle. Each booth had a small slot in front of the subject and experimenter.[17]

The experiment was designed to control the communication received by each of the four naive subjects at a particular session. The particular set of communication statements each received was determined by the experimental condition to which he had been randomly assigned. The four experimental conditions were: low orientation-low threat, low orientation-high threat, high orientation-low threat, high orientation-high threat.[18] Each subject was led to believe that he was sending messages to the three other persons in the room with him and that he was receiving messages from those other persons, with the experimenter as the intermediary in the communication channeling effort. In fact, each one of them was carrying on a "discussion" with three fictitious persons whose communication output was controlled by the experimenter and corresponded to one of the four experimental conditions.[19]

As Table 1 shows, in the reward schedule a monetary value was associated with each of the six letters.[20] All the experimental conditions involved four "discussants," two of whom held to one extreme position while the other two held to the other extreme position. To simulate such a distribution, the

[17] Most of the sessions were arranged so that either all the subjects were male or all were female. Due to the difficulties in schedules, two experimental sessions had some of each. However, there was an equal number of males and females in each of the experimental conditions.

[18] The four independent conditions were established through pilot studies to ascertain that these messages were in fact rated according to their designations.

[19] Anticipating that some student volunteers might not show up for the experiment, a few graduate students served as standbys to take the empty chair in order to simulate the four-person discussion group.

[20] In order to maximize the difference between consensus and nonconsensus, a six-point reward scale was adopted to prevent the obvious mid-point compromise. It was hoped that the naive subject would pick R initially when he was asked. All those subjects who did not choose R at the first choosing were discarded from the analysis.

TABLE 2
PERCEIVED REWARD SCHEDULES FOR THE EXPERIMENTAL SESSION

	R	O	Y	G	B	P
S_1	$0.10	$0.35	$0.60	$0.85	$1.10	$1.35
S_2	0.10	0.35	0.60	0.85	1.10	1.35
S_3	1.35	1.10	0.85	0.60	0.35	0.10
S_4 (subject)	1.35	1.10	0.85	0.60	0.35	0.10

TABLE 3
TALLY SHEET OF PLAYERS' FIRST CHOICE

S_1	R	O	Y	G	B	P*
S_2	R	O	Y	G	B	P*
S_3	R*	O	Y	G	B	P
S_4	R*	O	Y	G	B	P

*"Chosen" letter.

basic reward schedules for the four "discussants," one subject and three fictitious persons, were as shown in Table 2.[21] Subjects were also informed that all reward schedules were not necessarily the same.

The experimental session consisted of four stages: pre-discussion letter choice, discussion, post-discussion letter choice, and final questionnaire. At the pre- and post-discussion letter choice stages, subjects were asked to indicate the letter which they would choose. The pre-discussion choice is only a preliminary indication of each one's preference. After this initial preference indication each was informed of the preferences of the other "members" by a tally sheet. (See Table 3 for the tally sheet used in the study.) Of course, the tally sheet recorded each subject's response and the experimenter's pre-determined response of the three fictitious members.

The "discussion" consisted of twenty statements. Each subject was allowed to initiate five of these (statements 3, 7, 10, 13, 20). When it was his turn to initiate communication, he was given a set of four statements from which he had to choose one to be sent to the other three participants. The four subjects at each session were led to think that they were exchanging notes with each other: in fact, the notes which they received were predetermined by the experimenter according to the orientation and threat conditions which were assigned randomly.

After they had "communicated," they made their second choice. They were told beforehand that, if all four agreed on their choice, each would receive a reward according to his reward schedule. If they did not agree, they were told, none would get anything. After they had made their second choice, each was given a questionnaire designed to find out whether he suspected the true intent or procedures of the game.

Each subject was allowed to choose, whenever it was his turn to communicate, among four prepared statements. These statements were constructed in such a way that they could fit equally well into any of the four conditions. The four statements represent the four possible combinations of the independent variables: high orientation-low threat, low orientation-low threat, high orientation-high threat, and low orientation-high threat. Thus, a subject could respond with high or low orientation, and high or low threat.

[21] The amount of monetary reward required to arouse sufficient incentive was determined in a pilot study.

Statistical Design and Dependent Measures

Essentially the experiment is a 2×2×2 independent groups design with two levels of orientation and two levels of threat and two sexes. The dependent conciliatory measurement for predictions 1, 2, and 3 is taken from the subject's final choice. The dependent scores are: R = 0, O = 1, Y = 2, G = 3, B = 4, and P = 5. These are equivalent to the number of spaces which a subject had moved from his first choosing, since only those who chose R initially were included in the analysis.

Results and Discussion

Subjects were 62 college students. For the final analysis, however, there were only fourteen subjects in each cell, seven males and seven females, almost all of whom participated in single-sex groups. Tables 4 through 6 list the cell means, marginal means, and analysis of variance summary table.

There was significant interaction between orientation and threat. There was relatively more conciliatory behavior in the high threat than in the low threat condition when orientation was low. Prediction 1, therefore, was not confirmed.

Subjects receiving high orientation statements exhibited significantly greater conciliatory behavior than subjects receiving low orientation statements. The high orientation subjects moved an av-

TABLE 4
Cell Means of Conciliatory Behavior

	Low Orientation	High Orientation	Marginal
Male			1.68
Low Threat	1.71	2.29	
High Threat	0.43	2.29	
Female			2.39
Low Threat	2.14	2.71	
High Threat	1.43	3.29	

n = 7

TABLE 5
Orientation and Threat Marginal Means of Conciliatory Behavior

	Low Orientation	High Orientation	Marginal
Low Threat	1.93	2.50	2.21
High Threat	0.93	2.79	1.86
Marginal	1.43	2.64	

n = 14

TABLE 6
Analysis of Variance Summary Table of Conciliatory Behavior

Source	df	Mean Square	F-Ratio
Orientation (O)	1	20.64	26.47*
Threat (T)	1	1.79	2.29
Sex (S)	1	7.14	9.16*
O X T	1	5.79	7.42*
O X S	1	0.0	0.0
S X T	1	1.14	1.47
O X T X S	1	0.0	0.0
Within	48	0.78	

*Significant beyond the .05 level.

erage of 2.64 spaces, which is slightly more than half of the total possible distance (2.5 spaces). Prediction 2 was thus confirmed.

Prediction 3 was not confirmed. There was no significant difference between those who received high threat statements and those who received low threat statements in their conciliatory behavior.

Female subjects exhibited significantly greater conciliatory behavior than male subjects did. The mean amount of compromise of the female subjects (2.39 spaces) was almost as large as that of the total high orientation group (2.64 spaces).

Of predictions 1, 2 and 3, only prediction 2 was confirmed. This is consistent with field study findings of Gouran, Knutson, and Kline, that high orientation verbal behavior evokes a greater degree of conciliatory behavior than low orientation verbal behavior in groups seeking consensus.

Though my theoretical rationale suggests that high threat statements evoke less conciliatory behavior than low threat statements in a consensus-achieveing context (prediction 3), the results show no significant difference. The basis for prediction 3 was the finding from previous research that threat reduces cooperation.[22] The unexpected outcome may be due to different ways that an individual can internalize the attributes of a discussion situation. The threatened person can react by offensive measures. The offensive tactic is not to yield to the demands of the threatener, i.e., not to conciliate. At the same time, the threatened can counter with high threat verbal responses. This is the alternative specified in prediction 3 and its complementary predictions 5 and 7, and would result in no monetary reward. On the other hand, the threatened may use a defensive rather than an offensive strategy for coping with the situation. The coping or defensive measure is to give in because by conciliating one may at least receive a small monetary reward.

The determinant of which type of response will be selected in this context seems to be the degree of threat which a discussant perceives. In a situation perceived as extremely threatening, there can be a boomerang effect and thus the offensive tactic. Under tolerably threatening conditions, the reaction is to cope with the situation. My assumption is that most of the subjects in my high threat condition did not perceive the threat as intolerable. This explanation can be tested by replicating this study including much higher levels of threat. I would expect a quadratic component in the main effect of threat.

Although there is a significant interaction between orientation and threat, it is not in the direction prediction 1 indicated. The obtained significant interaction is due to an increase in the level of orientation, increasing conciliatory behavior much more sharply when threat was high than when threat was low. This interaction, though not suggested by Thibaut and Kelley's reward and cost paradigm, can be explained by the drive hypothesis.[23] Threat is a source of drive. High threat statements evoke greater drive than low threat statements. High threat statements, therefore, increase the emission of dominant responses by increasing the individual's level of general drive. The dominant response in this context, according to the Thibaut and Kelley paradigm, is that response which the individual expects

22 Deutsch and Krauss, 181-189. Also see J. L. Loomis, "Communication, the Development of Trust and Cooperative Behavior," *Human Relations*, 12 (1959), 305-315; Alvin Scodel, J. Sayer Minas, Philburn Ratoosh, and Milton Lipetz, "Some Descriptive Aspects of Two-Person Non-Zero-Sum Games," *Journal of Conflict Resolution*, 3 (1959), 114-119.

23 Robert B. Zajonc, "Social Facilitation," *Science*, 149 (1965), 269-274.

to give him the greatest reward. In the high orientation condition the dominant response is compromise, while in the low orientation condition compromise is the subordinate response. Therefore, high threat statements increase conciliatory behavior more as orientation is increased than low threat statements do.

To further probe the effect of the independent conditions upon the subjects' conciliatory behavior, I compared the estimated variances of the conciliatory behavior in each of the conditions. The findings thus obtained were not predicted by previous studies. Tables 7 through 10 show the estimated variances for each of the conditions and the F-tests of the differences among them. Estimated variance is a measure of the homogeneity of the behaviors of the members of a group after exposure to an experimental treatment. The larger the estimated variance the greater is the diversity of responses in a group. Comparisons between pairs of groups, as indicated in Table 8, show that at the high orientation level, as we go from low threat to high threat, estimated variance increases significantly; whereas at the low orientation level, as we go from the low threat to high threat, estimated variance does not increase significantly. (As a matter of fact, in this experiment, it decreased, but not significantly.) This seems to indicate that, as threat was varied in the low orientation conditions, subjects responded to each threat condition fairly uniformly. In the high orientation condition, the subjects did not respond to the high threat statements uniformly. In fact, the increase in the estimated variance indicates that some gave in to threat very much while others counteracted, bounced back and clung to their original positions.

TABLE 7
ESTIMATED VARIANCES OF ORIENTATION AND THREAT LEVELS

	Low Orientation	High Orientation
Low Threat	1.08	0.25
High Threat	0.64	1.311

The comparison in Table 9 indicates that the male subjects were responsible for the significant difference in estimated variances among the conditions.

TABLE 9
ESTIMATED VARIANCES OF ORIENTATION AND THREAT LEVELS SEPARATED BY SEX

	Low Orientation	High Orientation
Male Subjects		
Low Threat	1.63	0.20
High Threat	0.25	1.63
Female Subjects		
Low Threat	0.41	0.20
High Threat	0.53	0.49

Male subjects, when confronted with low orientation-low threat statements or high orientation-high threat statements, did not respond uniformly in their conciliatory behavior. On the other hand, males in the low orientation-high threat condition in general stuck with their original extreme choice, while males in the high orientation-low threat condition all tended to move to roughly the same compromise position toward the middle of the reward schedule. Almost all fe-

TABLE 8
COMPARISON OF ESTIMATED VARIANCES OF ORIENTATION AND THREAT LEVELS

	Low Orient.-Low Threat	High Orient.-High Threat	Low Orient.-High Threat
High Orient.-High Threat	1.22		
Low Orient.-High Threat	1.68	2.05	
High Orient.-Low Threat	4.30*	5.25*	2.56*

*Significant beyond the .05 level.

TABLE 10

COMPARISON OF ESTIMATED VARIANCES OF MALE SUBJECTS BY ORIENTATION AND THREAT LEVELS

	Low Orient.-Low Threat	High Orient.-High Threat	Low Orient.-High Threat
High Orient.-High Threat	1.00		
Low Orient.-High Threat	6.67*	6.70*	
High Orient.-Low Threat	8.00*	8.00*	1.20

*Significant at the .05 level.

TABLE 11

CELL MEANS OF ORIENTATION RESPONSE

	Low Orientation	High Orientation	Marginal
Male			3.18
Low Threat	2.29	4.29	
High Threat	3.00	3.14	
Female			3.68
Low Threat	3.00	4.71	
High Threat	2.43	4.57	

n = 7

males, on the other hand, took roughly the same compromise position toward the middle of the reward schedule under all the conditions.

As one might infer from these results, females overall exhibited significantly greater conciliatory behavior than males. (See Table 6.) This suggests that males were less logical than the females, who under any condition chose to compromise, since all subjects knew that they would receive no monetary reward unless there was consensus.

Tables 11 through 13 show that subjects who received high orientation statements averaged 4.18 high orientation responses, while those who received low orientation statements only averaged 2.68 high orientation responses. This result is consistent with those found by Knutson.[24] In his experimental groups, the confederate introduced either high, low, or no orientation. After the experiment he asked the discussants to rate each participant on his contribution to orienting the group. Knutson found that in the high orientation condition the subjects not only rated the confederate high in orientation but also their fellow discussants, while fellow discussants were rated low in the low and no orientation conditions.

The reason for this result could be that two factors influenced each person's orientation responses. Festinger suggested that the pressures of social reality and group locomotion act to increase the

[24] Knutson, "Orientation Behavior on Small Group Consensus."

TABLE 12

CELL AND MARGINAL MEAN ORIENTATION RESPONSE BY ORIENTATION AND THREAT LEVELS

	Low Orientation	High Orientation	Marginal
Low Threat	2.64	4.50	3.57
High Threat	2.71	3.86	3.29
Marginal	2.68	4.18	

TABLE 13

ANALYSIS OF VARIANCE SUMMARY TABLE OF ORIENTATION RESPONSE

Source	df	Mean Square	F-Ratio
Orientation (O)	1	31.50	19.75*
Threat (T)	1	1.14	0.72
Sex (S)	1	3.50	2.19
O X T	1	1.79	1.11
O X S	1	2.57	1.61
S X T	1	0.07	0.04
O X T X S	1	4.57	2.87
Within	48	1.59	

*Significant beyond the .05 level.

probability of uniformity in a group.[25] In the high orientation condition, both of these forces were at work. The subject could be expected to select high orienting statements because his social reality demanded them (i.e., the other "subjects" were selecting high orienting statements), and because they were obviously more likely to bring about the group (and, incidentally, his own) goal, consensus and a monetary reward. In the low orientation condition, on the other hand, social reality pressures demanded low orienting statements (i.e., the other "subjects" were selecting such statements) and achievement of the goal, consensus, seemed highly improbable. Therefore, in the low orientation condition, social reality pressures worked against the selection of high orientation statements, and group locomotion pressures were largely irrelevant.

Tables 14 through 16 show that subjects who received low orientation statements averaged 2.21 high threat statements in their responses, while those who received high orientation statements averaged only 1.04 high threat responses. This is contrary to the reasoning developed from the information and outcome dependencies paradigm. The obtained outcome could be due to the frustration caused by the lack of information and direction in the low orientation discussions. This frustration, in turn, may have caused the subjects who received low orientation statements to emit threatening statements. Though it may be more logical to respond with information which might maximize one's reward, when there is consistent indifference on the part of the other members, a discussant seems more likely to emit threatening statements as a result of his frustration.

Predictions 5 and 7 were contingent upon the support of prediction 3. Prediction 3 was not confirmed, and, as expected, neither were predictions 5 and 7.

Predictions 4 and 6 were not confirmed. This implies that there is little or no differential effect of threat upon orientation in evoking either orientation or threat responses. In the previous discussion, I suggested that when threat is very high a subject will respond with high threat and low orientation statements. Therefore, we would expect orientation responses to increase as orientation is increased under low to medium threat conditions; whereas, under very high threat conditions, we would expect little or no increase in orientation response as orientation statements of the other subjects are increased. Conversely, we would expect that for low to medium threat conditions, as orientation is increased threat response will decrease; whereas for a very high threat condition there is little or no decrease

[25] Leon Festinger, 'Informal Social Communication," *Psychological Review*, 57 (1950), 271-282.

TABLE 14
CELL MEANS OF THREAT RESPONSE

	Low Orientation	High Orientation	Marginal
Male			1.79
Low Threat	2.29	1.57	
High Threat	2.29	1.00	
Female			1.46
Low Threat	2.00	0.43	
High Threat	2.29	1.14	

n = 7

TABLE 15
CELL AND MARGINAL MEAN THREAT RESPONSE OF ORIENTATION AND THREAT LEVELS

	Low Orientation	High Orientation	Marginal
Low Threat	2.14	1.00	1.57
High Threat	2.29	1.07	1.68
Marginal	2.21	1.04	

TABLE 16
ANALYSIS OF VARIANCE SUMMARY TABLE OF THREAT RESPONSE

Source	df	Mean Square	F-Ratio
Orientation (O)	1	19.45	13.61*
Threat (T)	1	0.16	0.11
Sex (S)	1	1.45	1.01
O X T	1	0.02	0.01
O X S	1	0.45	0.31
S X T	1	2.16	1.51
O X T X S	1	0.88	0.61
Within	48	1.43	

*Significant beyond the .05 level.

in threat response as orientation is increased.[26]

Since sex was controlled in the experiment, I compared the threat and orientation measures of the verbal responses of the male subjects with the female subjects. There was no significant difference on these measures.

The verbal responses of the subjects were also analyzed across time. Table 17 indicates that the proportion of people who responded with high orientation statements increased to a peak (78.5%) halfway through the discussion and dropped to a low ebb (37.5%) at the end of the discussion. It is a quadratic function of discussion segments, whereas the proportion of people who responded with high threat statements is a quartic function of discussion segments. Since the bend at segment 4 is very slight, though significant, it is almost a cubic function. Table 17 shows that the proportion of subjects who responded with high threat statements rose from 39.3% at segment 1 to 57.1% at segment 2 and dropped to 14.3% at segment 3 and rose to 17.9% at segment 4 and continued to rise to 33.9% at the final segment.

The distribution curve of the orienta-

[26] To calculate the difference in response in orientation and threat across the five segments in discussion, I employed Cochran's Test, which can be viewed as a generalization of the McNemar two-sample test, to calculate the significant trends. See, William L. Hays, *Statistics* (New York: Holt, 1963), pp. 328-329, 351-360; Theodore J. Marr, "Conciliation and Verbal Responses as Functions of Orientation and Threat in Group Interaction," Diss. University of Iowa 1972, pp. 70-78, Appendix D.

TABLE 17
PERCENT OF SUBJECTS RESPONDING WITH HIGH ORIENTATION AND HIGH THREAT STATEMENTS

% of Subjects responding with:	Discussion Session Segment 1	2	3	4	5
High orientation statements	64.3	73.2	78.5	71.4	37.5
High threat statements	39.3	57.1	14.3	17.9	33.9

tion response indicates that there was a rise in the use of high orientation after the discussion began which reached a peak toward the middle of the period. During the second half of the communication period high orientation statements dropped off. To the experimental subjects it seems to have been more important to get their orientation in during the first half of the period than during the second half. In fact, when it was time to make the final decision, most of the subjects ceased to provide high orientation.

The distribution curve of the threat response indicates that the application of threat pulsates in frequency. This is reminiscent of the Scheidel and Crowell spiral model of communication feedback. Threat is increased at first and then threat is withdrawn to an almost negligible point. Toward the end of the discussion, an increased number of subjects applied high threat again.

Though no theoretical prediction of this communication process was formulated, previous experimental studies by Fisher, and Bales and Strodtbeck, have postulated phasic models which suggest these results.

CONCLUSION AND IMPLICATIONS FOR FUTURE RESEARCH

This study confirmed the findings of previous researchers that high orientation verbal behavior evokes a greater degree of conciliatory behavior than low orientation verbal behavior in a consensus-achieving context. In addition, I found that, though varying levels of threat statements alone do not influence conciliatory behavior differently, the effect of orientation is not independent of the level of threat statements. The interaction between orientation and threat is such that an increasing level of orientation increases conciliatory behavior much more when threat is high than when threat is low. The insignificant effect of threat statements on conciliation in this study could be due to subjects' failure to perceive the threat as extreme. Future studies may vary the level of threatening verbal behavior until offensive rather than conciliatory responses occur.

This study provides insight into the fruitfulness of two of the theories used in explaining group communication. A theoretical rationale based on Thibaut and Kelley's reward and cost paradigm can be used to make some predictions about group communication, but it is inadequate in some respects and needs to be complemented. The interaction of orientation and threat can be explained by combining the drive hypothesis with the reward and cost paradigm.

The results of this study indicate that females tend to compromise more than males. Furthermore, males apparently are less logical and more emotional in their conciliatory response to verbal statements.

The verbal response pattern of an individual is affected by the orientation and threat statements of the other members in a group. Again Thibaut and Kelley's paradigm, though it forms a basis for an explanation, needs to be complemented with other social psycholog-

ical theories. The concepts of social reality and group locomotion in Festinger's informal social communication theory are useful for understanding the orientation response. In a situation where there is insufficient orientation, people tend to respond with less orientation than when there is sufficient orientation. Insufficient orientation also generates more threat responses. This may be due to the frustration experienced when the orientation is insufficient to accomplish the group goal.

This study also suggested that group communication as a process across time can be systematically investigated as a continuous function of many variables. I found an oscillating function of threat responses across time whose shape is very similar to the sine curve. The orientation response curve is very similar to the inverted U curve. Further studies can be designed to investigate whether this cycle repeats itself when time is extended or whether it retains this particular shape.

THE EFFECTS OF SUBSTANTIVE AND AFFECTIVE CONFLICT IN PROBLEM-SOLVING GROUPS

MAE ARNOLD BELL

THIS study uses a conflict model to test the processes of opinion modification which sometimes lead to consensus. The apparent paradox of explaining such processes through conflict is resolved by examining the definition of consensus given by A. Craig Baird, a definition which stresses the process involved in reaching consensus, not the outcome of unanimity:

> Discussion at its best means continual weighing of the proposition, modification of it, even substitution of a different proposal, until the ideas of the assembly coalesce.[1]

In order for ideas to coalesce, they must be juxtaposed. The implication that the articulation and establishment of separate ideas is a necessary preliminary condition to reaching a consensual agreement has not been sounded as clearly as the importance of achieving the goal of unanimity. The focus of this study was not on consensus as an end product, but on the process across time defined by Baird which theoretically culminates in high quality solutions arrived at by group interaction.

A number of studies have attended to the concerns of this study: (1) the kinds of interaction most likely to result in a "correct" or, sometimes, a consensus solution;[2] (2) the contributions of substantive and affective conflict to these kinds of solutions;[3] and (3) across time, the ways in which verbal contributions interact to produce predictable sequences of interaction.[4]

The rationale called for a study of group problem-solving in which the independent variables of substantive and affective verbal input are controlled in order to measure both the individual

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[1] A. Craig Baird, *Public Discussion and Debate* (Boston: Ginn and Co., 1937), p. 357.

[2] For example, John K. Brilhart and Lurene M. Jochem, "Effects of Different Patterns on Outcomes of Problem-Solving Discussion," *Journal of Applied Psychology,* 48 (1964), 175-179; Carl E. Larson, "Forms of Analysis and Small Group Problem-Solving," *Speech Monographs,* 36 (1969), 454; and Irving L. Janis, *Victims of Groupthink* (Boston: Houghton Mifflin Co., 1972).

[3] Most noteworthy are Paul E. Torrance, "Function of Expressed Disagreement in Small Group Processes," *Social Forces,* 35 (1957), 318; Harold Guetzkow and John Gyr, "An Analysis of Communication in Decision-Making Groups," *Human Relations,* 7 (1954), 367-382; Dennis Gouran, "Variables Related to Consensus in Group Discussion of Questions of Policy," Diss. University of Iowa 1968; Thomas J. Knutson, "An Experimental Study of the Effects of Orientation Behavior on Small Group Consensus," *Speech Monographs,* 39 (1972), 159-165; Theodore J. Marr, "Conciliation and Verbal Response as Functions of Orientation and Threat in Group Interaction," Diss. University of Iowa 1972; and Dale G. Leathers, "Process Disruption and Measurement in Small Group Communication," *Quarterly Journal of Speech,* 55 (1969), 290.

[4] Robert F. Bales and Fred L. Strodtbeck, "Phases in Group Problem-Solving," *Journal of Abnormal and Social Psychology,* 47 (1951), 495; Laura Crowell and Thomas M. Scheidel, "Categories for Analysis of Idea Development in Discussion Groups," *Journal of Social Psychology,* 54 (1961), 155-168; Thomas M. Scheidel and Laura Crowell, "Feedback in Small Group Communication," *Quarterly Journal of Speech,* 52 (1966), 278; Aubrey Fisher, "Decision Emergence: Phases in Group Decision Making," *Speech Monographs,* 37 (1970), 53-66; and Marr.

verbal contributions of subjects and the process of reaching a solution. Such a study faces the dilemma that plagues most group communication studies—rigorous control of communication variables creates atypical situations, the results of which are questionable in generalizing to realistic communication contexts. On the other hand, the lack of control existent when groups interact without any external restraint results in confounded and sometimes contradictory causal explanations.

The basic question was how to create credible small groups and still maintain relatively complete control over their interaction. As Marr had suggested, game simulation offered at least the advantage of control. For example, by having four subjects believe that they are playing a game with the objective of choosing a correct solution, but restricting their communication to notes sent to each other, the experimenter can control every message each subject receives. Of course, nonverbal communication would have to be eliminated; the subjects would not be permitted to see or hear each other.

Marr accomplished such control by having his subjects separated in cubicles with an opening for passing notes prepared in advance by the experimenter. There are some obvious drawbacks to such a minimal social situation. One is generalizability. Another is the credibility of the experiment—do the subjects believe they are playing with the persons in the other cubicles? A final limitation is that forced response paradigm —restricting the subject's responses to one of four messages—may not be an appropriate measure of his or her communicative intentions. The messages were constructed by someone else. The problem remained of maintaining rigorous control over what messages the subjects received without closing them up in cubicles and without controlling the responses they sent.

That problem was resolved by using the University of Iowa's Computer Assisted Instruction Laboratory, which is equipped with cathode ray tube terminals. Each terminal resembles a portable television set which has been equipped with a typewriter keyboard. The subject could see the messages from the other players (which would be controlled by the experimenter) on his or her screen. The subject could also type in a message to the other group members which would be displayed on his or her screen as well as presumably on theirs. The subject could type in whatever message he or she wanted to communicate. The lab has sixteen terminals, making it feasible to run sixteen subjects each hour.

Method

The experiment consisted of a simulated discussion of a problem designed by Norman R. F. Maier and Allen R. Solem, often referred to as the horse-trading problem: "A man bought a horse for $60 and sold it for $70. Then he bought it back for $80 and sold it again for $90. How much did he make or lose in the horse business?"[5] When they had 353 college students solve this problem, 45.8 percent selected the correct answer —"made $20." The four incorrect answers given by over half their subjects were "lost $10," "broke even," "made $10," and "made $30." This study eliminated "lost $10" as the least defensible and proceeded with the other three incorrect answers and the correct one.

[5] Norman R. F. Maier and Allen R. Solem, "The Contribution of a Discussion Leader to the Quality of Group Thinking: The Effective Use of Minority Opinions," in *Group Dynamics: Research and Theory*, ed. Dorwin Cartwright and Alvin Zander. 1st ed. (White Plains, New York: Row, Peterson, 1953), pp. 561-572.

In order to control all the verbal messages a player received from the other players, a complete set of stimulus messages defending all four possible answers was constructed for each of four conflict treatment conditions: high-substantive/high-affective, high-substantive/low-affective, low-substantive/high-affective, and low-substantive/low-affective. For example, the following is a set of messages fitting each combination of variables in defense of "made $10."

High-substantive/high-affective: Your logic is wrong. Stop moving the numbers around and listen. Look, he sold the horse for a $10 profit, then he bought it back and lost that $10 because it cost him $10 more than he sold it for. Now that's obvious he made a $10 profit. If you can't see that, something is wrong with you.

Low-substantive high-affective: Your logic is wrong. Stop moving the numbers around and listen. It's obvious that he made a $10 profit. If you can't see that, something is wrong with you.

High-substantive/low-affective: Look, he sold the horse for a $10 profit, then he bought it back and lost $10 because it cost him $10 more than he sold it for. He then sold it again for $10 more than he bought it for. He made a $10 profit.

Low-substantive/low-affective: He made a $10 profit.

In the experiment, each subject was led to believe he or she was communicating via the terminal with three other people in the room. Actually, each subject received one of four sets of previously prepared messages defending the three solutions not selected. Subjects were randomly assigned to treatment conditions. Each subject made five responses during the experiment.

The dependent variables to be analyzed were the change to final correct solution and characteristics of each subject's five verbal responses. The latter were analyzed not only for substantive, affective, and metadiscussional content, but also for changes across time. Because of space limitations, results and interpretation of correct solutions will not be reported here.

Two judges rated the verbal responses.[6] The operational definition of a highly substantive response was as follows: "substantive if it offers a mathematical procedure indicating how the source of the response arrived at his or her answer." A response was defined as highly affective, "if it contains words of antagonism toward other people or toward their ideas." The metadiscussional content was defined as "metadiscussional if the statement makes a comment and/or a suggestion about the discussion procedure itself, as opposed to the problem being discussed." The combined reliability ratings for each of the three verbal variables were as follows: substantive .98; affective .81; metadiscussional .84.

Sets of hypotheses were generated for the substantive, affective, and metadiscussional content of the verbal responses, based on the theories of social comparison and group locomotion. Social comparison theory claims there is a tendency in human beings to evaluate their beliefs and behaviors: when physical reality checks are not available for these evaluations, the person will use other persons as points of reference.[7] The theory is particularly applicable to situations not experienced before, situations (as in this experiment) for which no individual norms of behavior exist.

Hypotheses concerning substantive content:

1a. If three of four members make highly substantive statements, the remaining member will contribute similarly. Or conversely, if three of four members make low-substantive statements, the remaining member will make low-substantive statements.

[6] I am indebted to Katrina Simmons and Connie Swank for their time and performance as judges.

[7] Leon Festinger, "A Theory of Social Comparison Processes," *Human Relations*, 7 (1954), 117-140.

1b. The mean substantive content of responses in the four experimental conditions will be in the following descending order: high-substantive/low-affective > high-substantive/high-affective > low-substantive/high-affective > low-substantive/low-affective.

Hypotheses concerning affective verbal behavior:

2a. If three of four members make highly affective statements, the remaining member will contribute similarly. Or conversely, if three of four members make low-affective statements, the remaining member will also make low-affective statements.

2b. The mean affective content of responses in the four experimental conditions will be in the following descending order: high-affective/low-substantive > high-affective/high-substantive > low-affective/low-substantive >low-affective/high-substantive.

The hypotheses for metadiscussional content are based on group locomotion theory—pressure for uniformity is derived from movement of a group toward its goal.[8] Verbal statements characterized as procedural suggestions may be explained by the individual's attempt to facilitate goal achievement, a motivation stronger when the group is progressing toward the goal. Such group-oriented statements seemed more likely to occur in discussions where negatively affective interpersonal conflicts are at a minimum. Hypotheses concerning metadiscussional verbal behavior:

3a. If three of four group members make statements expressing little, if any negative affect for any other member or the group as a whole, the remaining member will be more likely to contribute highly metadiscussional statements. Or conversely, if three of four members make statements expressing negative affect for other group members, the remaining member will not contribute metadiscussional statements.

3b. The mean metadiscussional content of responses in the four experimental conditions will be in the following descending order: low-affective/high-substantive > low-affective/low-substantive > high-affective/high-substantive > high-affective/low-substantive.

Results

Both hypotheses concerning substantive content were confirmed. The high-substantive stimulus messages produced responses with significantly higher substantive content than did the low-substantive stimulus conditions. Analysis of variance indicated that differences in the mean scores for the two substantive levels were statistically significant ($F = 16.67$, $p < .01$). Table 1 presents the cell means of the substantive scores by substantive and affective levels. The order of the mean substantive content was also confirmed: high-substantive/low-affective > high-substantive/high-affective > low-substantive/high-affective > low-substantive/low-affective.

TABLE 1
CELL MEANS OF SUBSTANTIVE SCORES ON SUBSTANTIVE AND AFFECTIVE LEVELS

	Low-Affective	High-Affective
Low-Substantive	3.34	3.91
High-Substantive	7.05	5.10

The analysis of the affective content of verbal responses confirmed one of the two hypotheses. Analysis of variance indicated that the differences in the mean scores for the affective levels was statistically significant ($F = 20.49$, $p < .01$). The high-affective stimulus statements produced responses with significantly higher mean affective content than did the low-affective stimulus messages. The means appear in Table 2. However, the

TABLE 2
CELL MEANS OF AFFECTIVE SCORES ON SUBSTANTIVE AND AFFECTIVE LEVELS

	Low-Affective	High-Affective
Low-Substantive	2.60	4.37
High-Substantive	2.94	3.98

[8] Leon Festinger, "Informal Social Communication," *Psychological Review*, 57 (1950), 271-282

order of affective content in the low-affective conditions was reversed from the order predicted. The data revealed the following descending order: high-affective/low-substantive > high-affective/high-substantive > low-affective/high-substantive > low-affective/low-substantive.

Neither of the predictions for metadiscussional content was confirmed. The analysis of variance did indicate statistically significant differences in the mean metadiscussional scores of the affective levels ($F = 8.97$, $p < .01$). But contrary to the hypothesis the high-affective stimulus conditions produced significantly higher mean metadiscussional content than did the low-affective stimulus conditions. Metadiscussional content produced by the four stimulus conditions was in the following descending order: low-substantive/high-affective > high-substantive/high-affective > low-substantive/low-affective > high-substantive/low-affective. Those results are in Table 3.

TABLE 3

CELL MEANS OF METADISCUSSION SCORES ON SUBSTANTIVE AND AFFECTIVE LEVELS

	Low-Affective	High-Affective
Low-Substantive	3.06	4.10
High-Substantive	2.92	3.37

To calculate the difference in trends of the substantive, affective, and metadiscussional scores across the five time segments, formulas were solved for the linear, quadratic, cubic, and quartic components of each of the three dependent verbal variables and analysis of variance was conducted for each component on each variable. The trend analysis of this study differs substantially from the phase analyses of Bales and Strodtbeck, Scheidel and Crowell, and Fisher. This study approaches the process of communication as a continuous function of many variables. The analyses of variance for the trend components of the substantive content indicated that the differences in the means for the linear trend were statistically significant ($F = 10.49$, $p < .01$). A graph of the mean substantive scores across the five time segments revealed that the substantive content of the responses tended to decrease slightly over time. The analyses of variance of the affective content also indicated significant differences in the means for the linear trend ($F = 27.30$, $p < .01$). A graph of the affective scores' means revealed that they increased during the discussion. The analyses of variance of the trend components for the metadiscussional scores also indicated a significant linear trend ($F = 8.46$, $p < .01$). The metadiscussional content of the responses also tended to increase across time. The interactions of all three analyses identified substantive conflict as an important continuing function affecting all three variables.

CONCLUSION

This study tested how verbal characteristics, specifically substance and affect, of the majority of group members may affect the verbal characteristics of another group member. Moreover, the study's use of a computer simulation has implications for methodological research. Simulations on an interactive computer system offer a potential for group studies that needs further exploitation. The trend analysis of this study, as a departure from the emphasis on correlational data to explain process over time, suggests approaching the process of communication as a continuous function of many variables.

COMMUNICATION IN GAME SIMULATED CONFLICTS: TWO EXPERIMENTS

THOMAS M. STEINFATT, DAVID R. SEIBOLD, and JERRY K. FRYE

THERE are many approaches to the study of conflict, several of which are discussed in the forthcoming book edited by Miller and Simons.[1] The approach of our studies is called Game Theory, which originated with the classic work by Von Newmann and Morgenstern in the early 1940s.[2] For our purposes, the method which Game Theory has devised to describe the situation in which behavior is occurring is of greater interest than its predictions concerning rational man. This method is the game matrix, which describes all of the possible behaviors for all parties to a situation and the outcomes or consequences of each of the choices.

The description is useful to students of communication and conflict for four main reasons. First, it allows the gains and losses of the parties to be specified, and second, it allows the subjects to make behavioral choices which result in the gains or losses. Most research on the effects of communication is conducted in the social equivalent of a partial vacuum. The messages are related only to the not-here and the not-now. There are no behaviors to be engaged in which will produce real gains or losses to the sources or receivers of the messages in their current situation. The game matrix provides one means of adding the situational variables of behavior and reward to the context of an experiment. Thus, results of such experiments are more likely to generalize to situations in which communication functions as an essential determinant of behavioral choices.

The game matrix also allows a third variable to be studied: power. Any matrix can be constructed so that the rewards a person receives in a situation are partly dependent on his own behaviors, and partly dependent upon the choices of the other person. It is our contention that much communication behavior takes place in situations where the source has the power to help or hinder the receiver in his progress toward certain goals, and the receiver likewise has the power to help or hinder the source. One's behaviors in a powerless situation may bear little relationship to one's actions when either or both of the parties to a situation has limited power over the others. The fourth benefit derives from the problem of the relationship between the concepts of attitude and behavior. It becomes unnecessary to ask if attitudes actually predict future behaviors, since the behavioral choices made in the game are a direct index of behavior when the rewards are real to the subjects. If one is interested in the attitude-behavior problem, the game situation allows one to investigate it by asking subjects how they intend to play the game, and correlating this

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[1] Gerald R. Miller and Herbert W. Simons, eds., *Perspectives on Communication in Social Conflict* (Englewood Cliffs: Prentice-Hall, in press).

[2] John Von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behavior* (Princeton: Princeton U. Press, 1944).

measure of attitude with the actual behaviors evidenced in the game. But the researcher can side-step the construct of attitude completely if he wishes, and concentrate his energies on the dependent variable of behavior.

The remainder of this article reports the results of several initial experiments on the effect of communication in game simulated situations.[3] These experiments employed full and open communication in all conditions (no restrictions were placed on the possibilities for communicating either verbally or non-verbally) and did not manipulate communication as an experimental variable. The results are compared with those of a prior study which did manipulate communication.

Two types of games were used in the experiments. The first was a Prisoner's Dilemma game (PD) which simulates a type of interpersonal conflict. The second was a Creative Alternative game (CA) designed by the senior author to simulate the type of situation in which collusive crime may occur.

Figure 1 displays a payoff matrix for the first type of game, the Prisoner's Dilemma, which was used in Experiment I. Player O has two possible moves, C and D. If O plays C, he receives either +4 or −2 units of reward, depending on P's choice. If O chooses D, he gets +6 or 0 units of reward, depending on P's move. P's payoffs are similarly determined by a combination of both players' moves. Given this matrix, C is the cooperative choice, and D is the competitive choice. Each player realizes that the competitive strategy is best for him personally, for it offers the possibility of the greatest gain with the least loss. But if both players make the competitive choice, both will lose.

The name, Prisoner's Dilemma, is derived from one explanation of the game given to persons who play it. Suppose P and O are two prisoners just apprehended by the local police. They are separated and told they have two choices: remain silent, represented by the C or cooperative choice, or confess and betray the other, the D or defecting choice. The two choices are displayed in Figure 1. The choice hinges on whether each can trust the other to remain silent. For if one confesses, he will go free and be rewarded by the police while the other will receive a heavy sentence. If both confess, both will go to jail, but they will receive relatively light sentences. Finally, if each remains silent, trusting the other will also do so, the police will have no case, and both will be released after only a few days in jail.

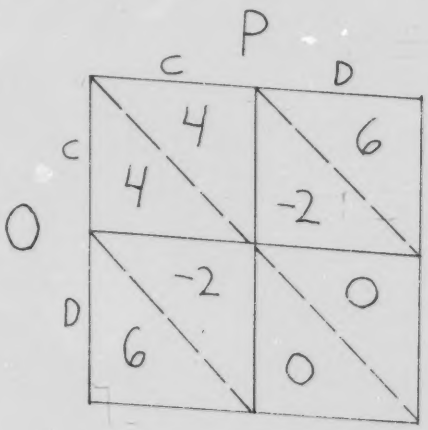

FIGURE 1: PD Matrix for Experiment I

Each of the studies reported here used real rewards. Several authors have discussed the difference between real reward and imaginary reward in game studies.[4]

[3] See Thomas M. Steinfatt and Gerald R. Miller, "Communication in Game Theoretic Models of Conflict," in Miller and Simons for a review of the literature on communication in gaming studies.

[4] Philip S. Gallo, Jr., "The Effects of Different Motivational Orientations in a Mixed Motive Game," Diss. University of California

A major point of these studies is that when a reward has no real value to a person it may be more interesting to invent a new game of maximizing the difference between oneself and the other player than to play in order to maximize one's own reward. If generalization from the gaming laboratory to non-laboratory situations is desired, the type of situational difference imposed by a difference in reward conditions must be taken into account. Suppose I earn $10,000 a year and you earn $9,000. Our supervisor gives you two choices. Either you can reduce your salary to $8,000 and mine to $7,000 or you can increase both of our salaries by ten percent of their current level. The choice seems obvious. You might like to earn more than I, but not at the expense of a cut in salary. But in laboratory studies using rewards of little or no real value to the person, the results often do not reflect this choice. Thus the cooperative-competitive measures used in studies of game behavior employing imaginary rewards may not directly generalize to non-laboratory settings unless those settings involve a strong motivation to maximize the difference between persons.

In a study reported elsewhere, Steinfatt used midterm examination points as real rewards in the PD game and found a significant effect for communication.[5] He employed undergraduate students at the University of Michigan in three communication conditions over 50 trials of the game and found that communication between the players from trials 1 to 12 produced more cooperative responses than did a delayed communication condition in which communication was allowed on trials 13 to 25. Both immediate and delayed communication produced more cooperative behavior than did a condition in which communication was never allowed. All subjects in Steinfatt's experiments were under real reward conditions. The first experiment reported below attempted to replicate the Michigan results and to investigate the differential effects of real and imaginary rewards on cooperative behavior in a PD game. It was expected that real rewards would produce more cooperative responses than imaginary rewards.

Experiment I

Method

The game matrix used for Experiment I is identical to that used by the Michigan subjects and appears in Figure 1. Subjects in Experiment I were 92 undergraduate students enrolled in speech courses at the State University of New York at Buffalo. The purpose of the experiment was to determine the level of cooperative responses in a PD game over 60 trials under real and imaginary reward conditions. These conditions were operationalized as follows: For every 15 points earned in the real reward conditions, the subject received one point on the midterm examination. This connection was made explicit in the instructions to the subjects. In the imaginary reward conditions, subjects were asked to imagine that they would receive one midterm point for every fifteen game points. Subjects played the game in a classroom. The experimenter explained how to read a game matrix to the subjects and then seated each pair facing each other. The game matrix was placed between the players and each subject had a pen and a score sheet in front of him. Subjects were paired randomly using four classes totaling 92 students.

at Los Angeles 1963; Philip S. Gallo, Jr. and Charles G. McClintock, "Cooperative and Competitive Behavior in Mixed-Motive Games," *Journal of Conflict Resolution*, 9 (1965), 68-78.

[5] Thomas M. Steinfatt, "The Prisoner's Dilemma and a Creative Alternative Game: the Effects of Communication Under Conditions of Real Reward," *Simulation and Games*, 4 (1973), 389-409.

28 pairs in the imaginary reward condition and 18 pairs in the real reward condition. All subjects completed 63 trials of the game, but the last three trials were not included in the analysis to avoid studying end-game effects. Subjects were informed before the start of play that it would be possible to split their points with the other player at the end of the trials if they so desired and that they could talk with this partner at any time. Except for these two conditions, the Buffalo experiment replicated quite closely the real reward conditions of the Michigan experiment.

Results and Discussion

No players in either condition asked to share their rewards. This finding replicates the Michigan result obtained when there was the implicit possibility of sharing in the situation (i.e., when the possibility was not made explicit by the experimental instructions). Point sharing outside of the game itself does not seem to occur in PD games. The results of Experiment I are summarized in Table 1.

The difference in percentage of cooperative responses over all trials between the two reward conditions is significant by Z-test for proportions ($Z = 1.842$, $p < .033$). The number of pairs with 100% cooperation is interesting both because this number influences the cooperative percentage and because it may be compared for the two reward conditions. Under imaginary reward conditions from 10% to 36% of the pairs were responding completely cooperatively on any given trial block and three of the 28 pairs made no competitive responses for all 60 trials. This compares with approximately 50% of the 18 pairs in the real reward condition who responded completely cooperatively in any given trial block and the 6 pairs who made no competitive responses throughout the trials. Thus, real rewards in a full communication PD game seem to result in a level of cooperation significantly above that achieved under imaginary rewards. A great portion of this difference is due to the number of pairs who form a 100% cooperative response set. If only data from non-100% cooperative pairs is analyzed, the difference is still in favor of the real reward condition but is not significant. The effect of real rewards over imaginary rewards seems to be to create more pairs which respond completely cooperatively, and to increase only slightly the level of cooperation in pairs that engage in at least some competitive behavior. It must be remembered that these statements apply only to conditions of full communication in a PD game when the possibility for side payments has been made explicit. The Buffalo experiment did not investigate situations of restricted communication.

TABLE 1

COOPERATIVE RESPONSES FOR BLOCKS OF TEN TRIALS BY REWARD CONDITION

	Imaginary Reward*		Real Reward**	
Trials	Percent Cooperative	Number of Pairs 100% Cooperative	Percent Cooperative	Number of Pairs 100% Cooperative
1-10	58	3	82	8
11-20	62	5	81	10
21-30	61	7	79	8
31-40	61	8	75	8
41-50	68	10	84	9
51-60	69	10	83	11
All trials	63	3	81	6

*N = 28.
**N = 18.

A comparison of the results of Experiment I with Steinfatt's previous findings with the Michigan subjects (see Figure 2) indicates that the highest level of cooperation over all trials is found under conditions of real reward and full communication (81% in Experiment I and 84% in Steinfatt's immediate communication condition). With imaginary reward and full communication (Experiment I) cooperation is 63%. With real reward but no communication cooperation drops to 32% (Steinfatt) which is not different from the finding of 30% to 40% cooperation typical in PD games of imaginary reward and no communication. Thus there seems to be no main effect for real over imaginary reward. The existence of communication does produce an apparent main effect over no communication in a PD game. In addition, communication appears to interact with rewards to produce an even higher level of cooperation than is achieved with full communication alone. It is interesting that communication has an effect in imaginary reward situations but that its major effect is reserved for those situations where the rewards are real.

To summarize, Experiment I replicated the results obtained by Steinfatt, and also found a significant difference in the level of cooperative responses obtained under full communication, with the real reward condition producing

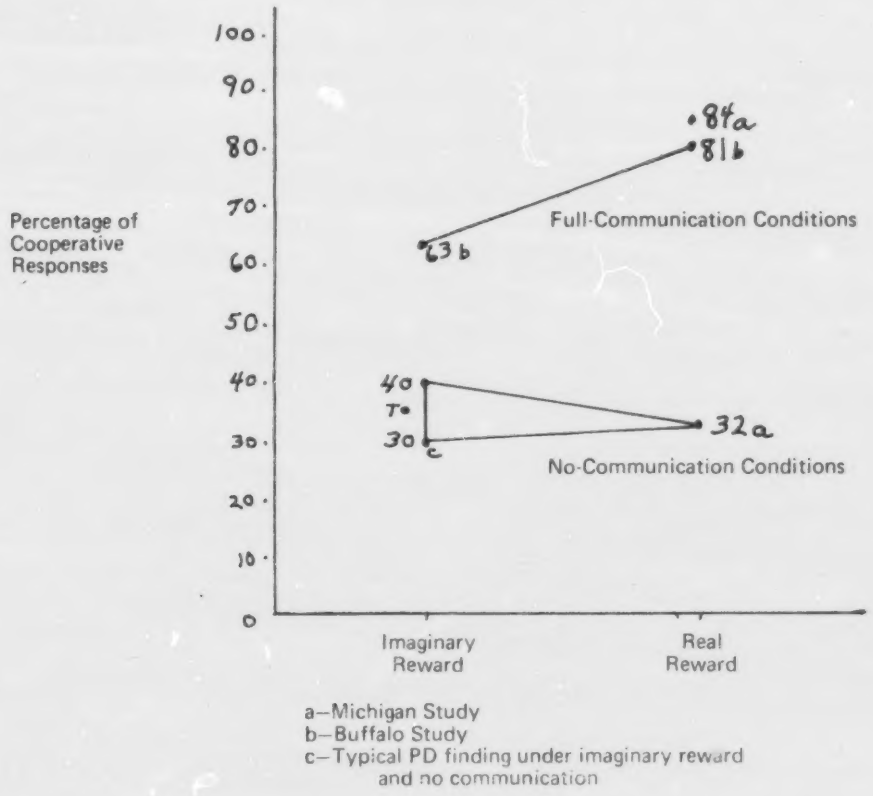

FIGURE 2. Cross Experiment Comparison of the Effects of Communication and Real Reward on Cooperative Choices in the Prisoner's Dilemma Game.

higher cooperation than imaginary reward.

Experiment II

Experiment II employed the creative alternative game (CA) used by Steinfatt in his second experiment (Figure 3).[6]

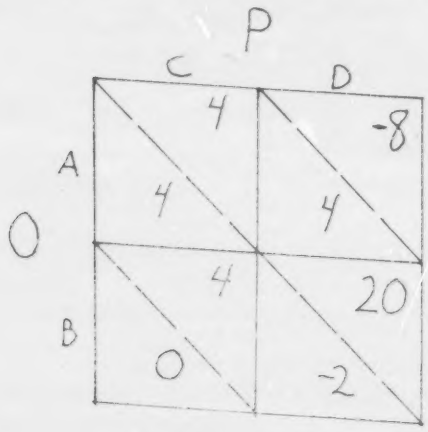

Figure 3. Matrix for Steinfatt Creative Alternative Game

The CA game is an attempt to model the type of situation where collusive crime may occur.[7] Collusive crime (crime without a victim) is a situation in which two or more persons illegally enter into a mutually beneficial agreement which increases the total payoff to the coalition in one of two ways. (1) If the situation is defined as constant sum with "the house" as a player, the gain to the coalition produces a loss of like amount to the house. (2) If the situation is viewed as variable sum the increased payoff occurs at no one's expense, resulting instead from increased utilities to both parties. Examples of (1) might be the "spiff money" offered by some stereo and high fidelity equipment manufacturers to salesmen and retail outlets to push products or to give favorable display space, and other examples of bribes and kickbacks as found in most of the Watergate related matters. Examples of (2), depending on one's point-of-view, might be the paying of a fee to a prostitute or buying a nickel bag of marijuana. The house is not usually represented in a CA matrix but is the source of the actual payoffs in the (1) situation. If the mutually beneficial agreement is *not* illegal, then the situation simulated by the CA game is similar to the large class of human situations in which an advantage will accrue to one of two people who are interacting if the other changes his or her current behavior when he or she has no reason for doing so.

An important feature of a CA simulation is that the choice of the creative alternative must be self-generating. It must occur without any hint, suggestion, or encouragement by anyone other than the parties to the agreement. The value of the payoff to both parties should be such that at least one of the parties is able to see the possibility of such an arrangement without receiving outside information that such a solution exists and without encouragement that either party might wish to seek it. For such a situation communication between the parties will be of maximum importance.

The CA game is quite different from a PD game. First, it is not symmetric since the payoffs are not the same for P and for O. Secondly, either player in the CA game can guarantee himself a payoff of 4 units by making choice A for player O or choice C for player P. At first glance it appears that P is in a better position than O since P could get 20 units of reward and O can get only 4 units maximum on any one trial. This advantage becomes illusory on analysis since O has no reason to chooose B. If O chooses A he guarantees himself 4 units of reward while if he chooses B he gets either noth-

[6] Steinfatt, 403-406.

[7] See Steinfatt, 400-403, for a more complete discussion of the CA game.

ing or loses 2 units. Thus O is going to choose A. P may or may not see this before the first move. If P concentrates on his own rewards and fails to analyze the game from O's perspective before the first trial, then P may choose D for his first response hoping that O will choose B. O of course chooses A, and after no more than three or four trials all P subjects in previous experiments (using no communication and imaginary reward) extinguished on the D response.[8]

The CA game is a very boring, uninteresting game when played under these conditions. But suppose a new element is added to the game. If subjects are allowed to communicate perhaps one of them will see a creative alternative to the constant AC response pattern. The third major difference of the CA game from a PD game is that one of the cells contains a joint total payoff which is greater than the sum of the payoffs for the obvious choice (AC) cell. The existence of this cell, the BD cell in Figure 3, has no bearing on the game behavior of the subjects when they cannot communicate. Would it have an effect if they could communicate, especially if they were under real reward conditions? Experiment II of the present study attempted to answer this question.

But the implementation of full communication and real reward conditions within a game theoretic framework is still not sufficient to explain real world conflict; other variables such as personality must also be considered. Here we depart from the bulk of game theory research. Since game theorists are concerned with rationally conducted conflicts and the purely structural features of games, game theory has emerged as a "depsychologized" decision theory, according to Rapoport.[9] At the same time, because game researchers have been interested in how the game is played rather than who the player is, the relevance of game theory to actors in real conflict situations is often dubious. If a comprehensive theory of cooperation-conflict is to be generated within a game-theoretic framework, personality variables must be accounted for.

The personality characteristic *dogmatism* was chosen as an independent variable in this study for two reasons. First, the results of previous game theoretic studies suggest that traits such as abstractness-concreteness, tolerance of ambiguity, and dogmatism do affect cooperation-conflict behavior, though the effects have not been uniform;[10] and second, in some of its features the nature of the game being played is similar to the Denny Doodlebug problem, used by Rokeach to investigate the construct of dogmatism.[11] The problem cannot be solved until the assumptions and beliefs usually held about the ways animals and objects move about are replaced with new ones more relevant to Joe Doodlebug's situation.

Subjects who are allowed to communicate while playing the CA game are in a situation similar to that of subjects attempting to solve the Doodlebug problem. They must overcome specific beliefs about what is possible in the game situation and then develop new beliefs that permit a creative solution of the problem. Given delayed communication in the CA game, P develops a belief that

[8] See Steinfatt, 401.

[9] Anatol Rapoport, "Conflict Resolution in the Light of Game Theory and Beyond," in *The Structure of Conflict*, ed. Paul Swingle (New York: Academic Press, 1970), p. 1.

[10] Daniel Druckman, "Dogmatism, Prenegotiation Experience, and Simulated Group Representation as Determinants of Dyadic Behavior in a Bargaining Situation," *Journal of Personality and Social Psychology*, 6 (1967), 279-290; J. Gahagan, J. Horai, S. Berger, and J. Tedeschi, "Status and Authoritarianism in the Prisoner's Dilemma Game," paper presented at the meeting of the Southeastern Psychological Association, Atlanta, April 1967.

[11] Milton Rokeach, *The Open and Closed Mind* (New York: Basic Books, 1960).

O will always choose A, both from P's observation of the game matrix and from his observation of O's behavior. No matter what the conditions of communication, P also develops confidence in the belief that the reward structure of the game is irrevocably defined by the payoff matrix presented to him. This belief corresponds to the real life assumption that, "Things are as they obviously appear to be and cannot be changed." A third belief inherent in most gaming situations is that anything not specifically allowed by the rules is specifically forbidden. If P wishes to develop a creative solution to the problem, he must overcome all of these beliefs. The same holds true for O.

Since highly dogmatic persons take considerably longer than their less dogmatic counterparts to solve the Doodlebug problem and since the CA game has been likened to the Doodlebug problem, it follows that highly dogmatic CA players should be less successful than less dogmatic players in arriving at the creative solution. Previous research by Steinfatt seems supportive of this reasoning.[12] In a second experiment with 48 undergraduates of the University of Michigan playing 40 trials of the CA game, he found that no pairs reached a creative solution when they were not allowed to communicate. With immediate and with delayed communication under real reward conditions he found from 20 percent to 40 percent BD responses. These BD responses came almost exclusively from pairs involving two less dogmatic players or a less dogmatic player in the P position. With no communication or with a highly dogmatic player in the P position he found less than 5 percent (usually 0 percent) of the responses were BD responses. Thus, both communication and a less dogmatic person in the P position were found to be necessary, but not sufficient conditions for reaching a creative solution in a CA game. Once reached, that solution was fairly stable and did not disappear when communication was cut off. This research and the reasoning behind it led us to the following hypothesis:

1. Highly dogmatic persons will be less likely to achieve a creative solution (more than two consecutive BD responses) in a CA game than will less dogmatic persons under conditions of full communication and real reward.

In addition to hypothesis 1, we were interested in any possible differences in behavior between the Michigan undergraduates and inmates at a federal prison. We expected that both groups' behavior in the CA game would be quite similar, despite differences in the demographic characteristics of the subjects and the nature of the real reward.

Method

The participants in this research were all members of a college level speech course taught by the second author at a federal prison in Michigan during the first half of 1973. The prisoners, 21 males, were between the ages of 19 and 30 years. Each student had at least a high school education (or general equivalency diploma) and several had completed some college before their incarceration. Each student was acutely aware that his final grade in this course and other classes would help to determine (1) how soon he might begin to travel to local colleges for study-release time, and (2) in some cases, how much earlier parole might be granted. In the thirteenth week of class, forms containing a modification of Rokeach's 66-item Dogmatism Scale (Form D) were distributed to the 21 students.[13] The dogmatism scores ob-

[12] Steinfatt, 406.

[13] Rokeach, pp. 413-415.

tained on these seven-point items ranged from a low of 185 to a high of 292. One subject's form was discarded because he alternately marked extreme ends of the scale. Based on these scores, subjects were rank ordered from 1 to 20 (where rank 1 is the lowest dogmatism score and rank 20 the highest). Ten pairs of subjects were then formed in which ranks 1 and 2 were placed together, 3 and 4 together, etc. Partners were therefore paired with someone who was only one rank above or below their own.

The following week the students met for a final exam. The instructor produced a copy of the test and explained that it consisted of 25 identification questions worth one point each (25 percent of the final grade). The instructor added that if the class agreed to participate in a "learning exercise" they would not have to complete each question on the test. The purpose here was to induce a real reward condition. Based on his performance in the game, the student would be required to answer the 25 exam questions, less however many questions he earned in the game. Hence, the student would be able to select those questions for which he was best prepared and still achieve the maximum score by having those responses count more. All class members readily agreed to participate.

The 20 subjects were divided into the ten pairs drawn up after analyzing the dogmatism test data the previous week. To insure unformity, persons who had the lower score in each pair were assigned the P position and each partner the O position.

A large matrix (like the one in Figure 3) was drawn on the blackboard, and the instructor took approximately ten minutes to explain all possible moves and all possible rewards. No mention was made of the possibility or impossibility of side payments. After several practice trials the researcher specified the exact reward: for every twenty points won after the 37 game trials were completed,[14] the student would have to do one question fewer on the final exam. Subjects were told that they were to hide each decision until partners had marked their own decisions, never to change marks for any reason, and to do each trial independently and simultaneously. After each pair finished they were interviewed and asked: (1) Did they wish to share any of their points with their partner? (2) Had their partner tried to influence them to mark any particular decision at each trial, and, if so, with what success?[15]

Results and Discussion

After 10 trials, the data from the pair composed of the two subjects highest in dogmatism were lost when P bitterly abandoned the game after O would not listen to his pleas for some degree of "cooperation." Player O was consistently choosing his A response and refused to change his behavior to allow P to obtain the 20 points. Due to the intensity of this particular conflict, it was difficult to interview these two subjects, but it seems clear that P was asking O to engage in altruistic behavior and that they were not discussing the possibility of splitting the 20 points from the BD cell.

[14] The decision to have Ss perform 37 trials in the Creative Alternative game stemmed from Steinfatt's (1973) finding that for players allowed to communicate from the first trial to the twelfth (but not subsequently) cooperative responses "dropped only slightly toward the end of the trials" (i.e., between trials 37 and 50 the percentage of cooperative trials dropped only to 81 from 83).

[15] The instructor explained the nature of the study to the students after the trials and post experimental interviews were completed, and allowed each student to either 1) take as a final grade the grade he had earned to that point in the term; or 2) take the entire exam with his partner; or 3) work on the exam alone, but omit questions based on the number of points he had earned in the game.

The subsequent analysis does not include data from this pair except where its inclusion is specified.

Only one pair achieved a creative solution to the game as defined by at least three consecutive BD responses. This pair was composed of less dogmatic players who chose BD as their response for all 37 trials of the game, and in the post game interview they requested a point split resulting in 9 points for each player on each trial. No other players requested any point split. While several less dogmatic players reported that they had considered, but rejected, the possibility of BD responses and side payments, none of the highly dogmatic pairs reported considering this possibility. While an occasional BD response occurred in the eight remaining pairs, these responses were isolated and seem to be due to chance maneuvering by the players rather than to a recognition of the possibilities of side payments. These random BD responses occurred on the average of once every 11 trials for the eight remaining pairs. This is a higher rate than found with the Michigan undergraduates who made fewer than one BD response per 40 trials in pairs whose characteristic response was not the BD response. Except for the difference in the random BD response rate, the behavior of the players in the Michigan sample and the prison sample was quite similar.

Neither the Michigan study nor Experiment II was able to employ enough subjects in a real reward condition to conduct a meaningful test of significance on the results with the CA game when considered alone. By combining the results of the two experiments, enough subjects are available to produce interpretable results. Four pairs of highly dogmatic subjects and four pairs of less dogmatic subjects in Steinfatt's Michigan experiment participated in communication conditions with real rewards that are comparable to the conditions for Experiment II.[16] Three of the four less dogmatic Michigan pairs achieved a creative solution while none of the highly dogmatic pairs did so. Combining these results with the results of Experiment II gives four of nine less dogmatic pairs with a creative solution and zero of nine highly dogmatic pairs with a creative solution if the pair who stopped playing after 10 trials is included. Using Fisher's exact probability test (the hypergeometric distribution), the difference between the highly and the less dogmatic pairs is significant at the .0411 level. If the data from the one highly dogmatic pair who almost came to blows and had to stop playing is not included, the probability is .0529. In either case, we would argue that these findings begin to present a convincing case that there is a difference in creative alternative game behavior between highly dogmatic and less dogmatic players. We regard the data as generally supportive of our hypothesis, but believe that more data are needed before a stronger statement can be made. Perhaps as convincing as the test of significance is the fact that we have yet to find a highly dogmatic pair who seem to recognize the possibilities of side payments according to the post experimental interviews. Several of the less dogmatic pairs who did not reach a creative solution in their game behavior reported the recognition of side payments as a possibility, but for one reason or another were not able to translate their thoughts into action.

Conclusions

The first experiment investigated behavior in a PD game under full communication and compared the effects of

[16] These are the HH and LL pairs in the IC and DC conditions of the second experiment reported by Steinfatt.

real and imaginary reward. Real reward was found to produce a higher level of cooperative response than imaginary reward. When the results of Experiment I are compared with the results of previous experiments an interaction between reward conditions and communication conditions is suggested. Under conditions of highly restricted communication, real reward does not seem to produce a level of cooperative response which is substantially different from that found under imaginary reward conditions. But when full communication is allowed, real reward produces more cooperation than does imaginary reward. This apparent interaction is in addition to an apparent main effect for communication across reward conditions. Thus, the significant effect for real over imaginary reward found in Experiment I is best regarded as a simple effect under full communication rather than as a true main effect. Ideally, these propositions should be tested in a single experiment rather than in the comparison of results across different experiments.

The second experiment examined the effect of communication on a situation which simulated the type of environment which may result in collusive crime: a desired goal is obtainable if one person can convince another that the goal can, in fact, be attained. At least two variables seem related to this process according to the results of Experiment II. First, communication, the opportunity to exchange information concerning the possibilities of the situation, is necessary. Without communication no creative solutions occur. Second, the personality variable dogmatism seems to be related to the ability to achieve a creative solution in a CA game. Does this mean that dogmatism is related to the probability that an individual will engage in collusive crime? To the extent that dogmatism is a measure of a person's openness to new information and to new ways of thinking, perhaps it is related. The variable of dogmatism seemed relevant for inclusion in Experiment II due to the similarity of belief change processes involved in the solution of both the CA game and the Denny Doodlebug problem. Persons low in dogmatism may be more successful in completing a belief change process which precedes collusive crime than are persons high in dogmatism.

But the action of the dogmatism variable seems more complex than this simple statement. Previous research has indicated that dogmatism has its strongest effect when very high-credible and very low-credible sources are used.[17] Highly dogmatic individuals tend to act in accord with statements originating from very positive (for them) sources and against statements from negative sources significantly more often than their less dogmatic counterparts.[18] That is, highly dogmatic persons are more easily influenced by persons they consider authority figures than are less dogmatic persons. It would seem that if the authority figures of a highly dogmatic person were urging him to enter into collusion with them that he would be more likely to do so than would a less dogmatic person in the same situation. Yet less dogmatic subjects seem more capable of reaching a creative solution in a CA game than do highly dogmatic subjects.

If authority figures were urging the person *not* to engage in a particular collusion, we would expect the high-dogmatic to follow their advice more often than would the low-dogmatic person. We would expect more collusive actions by

[17] Erwin P. Bettinghaus, Gerald R. Miller, and Thomas M. Steinfatt, "Source Evaluation, Syllogistic Content, and Judgments of Logical Validity by High-and Low-Dogmatic Persons," *Journal of Personality and Social Psychology*, 16 (1970), 238-244.

[18] Bettinghaus, Miller, and Steinfatt, 242-243.

the less dogmatic subjects and fewer by the highly dogmatic subjects. If the authority figures were urging collusion, it would be difficult to predict a difference between subjects based on dogmatism since the source argument would predict more collusion with high dogmatics while the Doodlebug argument of a belief change process would predict more collusion by low dogmatics. Thus, further research on dogmatism in simulations of collusive crime is needed before any strong conclusions are drawn concerning its effects.

ARGUMENT IN NEGOTIATION: A THEORETICAL AND EMPIRICAL APPROACH

NANCY A. REICHES and HARRIET B. HARRAL

OUR concern is with the communicative process of negotiation as a form of conflict resolution. Contemporary literature expresses the view that the role of communication in negotiation cannot be ignored. Communication researchers, however, have not identified, analyzed, and integrated into a single model the specific communication patterns that exist during bargaining. We shall contend that viewing communication in negotiation as an argumentative transaction encourages heuristic analysis of that particular form of conflict interaction. In this paper, we shall (1) present a paradigm to facilitate empirical research, and (2) report the results of two empirical studies derived from that paradigm.

Our concern for a communication-centered theory of negotiation derives from a recognition that negotiation models often ignore the interaction of the negotiators and instead focus on a determination of outcome. Although these models purport to account for the behaviors of each negotiator, "most theories of bargaining do not give direct and explicit attention to the process of interaction between the parties."[1] For example, some negotiation models view the bids and counterbids of each bargainer as being independent of his opponent. Some models "see the action of each party as affected in part by its perception of the other side's likely actions."[2] At least one description of the possible settlement includes the "probability that a given demand will be acceptable to the other side."[3] Though many theories do not analyze the actions of a negotiator as being a reaction to his opponent's previous moves, the study of such reactions is imperative if negotiation research is to be theoretically productive to communication scholarship.

The inappropriateness of outcome-centered models has led to our belief that we must identify and analyze the patterns of communication manifest in negotiation. Our claim that negotiation interaction can most usefully be recognized as argumentation is an extension of J. Sawyer and H. Guetzkow's description of:

> the core of what is generally taken as the central process of negotiation—reciprocal argument and counter-argument, proposal and counterproposal, in an attempt to agree upon actions and outcomes mutually perceived as beneficial.[4]

Two initial observations about the nature of argumentation clarify our reasoning. First, argumentation must be differentiated from a total conflict situation. In argumentation, and negotiation, one "wins" relative to his own goals and

Ms. Reiches and Ms. Harral began this paper when both were graduate students at the University of Colorado. Ms. Reiches is now a doctoral student at the Ohio State University, and Ms. Harral, having completed her doctorate at Colorado, resides in Chicago. They wish to acknowledge the help of David H. Smith in the design of the experiments reported.

[1] Martin Patchen, "Models of Cooperation and Conflict: A Critical Review," *Journal of Conflict Resolution*, 14 (1970), 392.

[2] Patchen, 392.

[3] Patchen, 392.

[4] Jack Sawyer and Harold Guetzkow, "Bargaining and Negotiation in International Relations," in *International Behavior: A Social-Psychological Analysis*, ed. Herbert C. Kelman (New York: Holt, 1965), p. 479.

value system: satisfaction with the bargaining outcome does not necessarily imply crushing one's opponent. Negotiation, then, can be compared to a variable-sum game, a game that blends conflict and cooperation, a game of mutual dependence. Thomas Schelling describes these games in which:

> though the element of conflict provides the dramatic interest, mutual dependence is part of the logical structure and demands some kind of collaboration or mutual accommodation—tacit, if not explicit—even if only in the avoidance of mutual disaster.[5]

Therefore, the distinguishing feature of the game is that both participants can "win" to some extent. For example, a labor contract must be acceptable to both labor and management; both a buyer and a seller must accept the terms of a sale or no transaction takes place. Each party wants the better of the deal, but the other party must also profit from it if agreement is to occur.

A strict game theory approach is not satisfactory if our goal is to generate a communication theory of negotiation. The resolution of conflicting interests must be viewed as a process, not just the implications of a set of outcomes. For example, what occurs during bargaining may have ramifications reaching beyond the explicit terms of the contract or legal settlement. Again, outcome-oriented models are inadequate if a communication theory of negotiation, and eventually of conflict resolution, is to be generated. Based on these assumptions, we contend that our analysis of negotiation as an argumentative transaction begins with the position at which much negotiation research ends.

Defining negotiation as a form of argumentation is especially appealing because of the close parallels between argument and general concepts of conflict resolution. Resolution of a conflict—and argument is conflict—implies the confrontation of choices and some uncertainty about a set of alternatives. By argument we mean not only a set of statements with supporting evidence comprising a claim, but a concern with the "techniques allowing us to induce or to increase the mind's adherence to the theses presented for its assent."[6] In bargaining, such assent is crucial if a decision is to be reached. The notions of a set of alternatives and of a choice-making process are also critical. Once a set of alternatives has been articulated, the negotiators employ forms of argument in support of their most preferred position. One contender's arguments can increase the number of choices available to his opponent, can increase the uncertainty about some choices, and can foster the awareness that any of a range of alternative outcomes presents a more desirable solution than no agreement at all.[7]

In the same way that each bargainer makes choices about possible outcomes, he makes choices about the kind of argument he will present. The forces influencing these choices warrant careful examination; similarly, the communicative outcomes of these choices demand observation and analysis. The claims that each bargainer can advance are determined by what we call dimensions of argument—dimensions that aid critical evaluation of any argumentative transaction, but that are especially pertinent to the examination of negotiation.

[5] Thomas C. Schelling, *The Strategy of Conflict* (Cambridge: Harvard Univ. Press, 1960), p. 83.

[6] Ch. Perelman and L. Olbrechts-Tyteca, *The New Rhetoric: A Treatise on Argumentation*, trans. John Wilkinson and Purcell Weaver (Notre Dame, Ind.: Univ. of Notre Dame Press, 1969), p. 4.

[7] What we refer to here is that a wider range of alternatives increases the latitude of acceptable choices available to each bargainer. By increasing the scope of alternatives, it follows that the chances are increased for reaching a settlement.

The importance of a dimensional analysis lies with the assumption that the integrated product of the dimensions, rather than discrete sets of isolated argumentative factors or components, governs the form of the interaction. That is, no single dimension has total influence over the claims advanced, over the eventual settlement, or over the communicative ramifications of the negotiation experience; rather, the dimensions interact to produce a unique communicative transaction. The five dimensions we shall describe are *power, risk, compromise, prediction,* and *situation.*

Power and *risk* can most easily be discussed together, since an important relationship exists between them. Perceptions of power, determined by the relative rewards and costs in a situation, also help to decide the amount of risk that a negotiator may take at a given time. Power is measured by the negotiator's resources and the extent to which his opponent is dependent upon those resources. In this mixed-motive interaction, though, power relations are not necessarily one-sided. As Wally Jacobson suggests, "because *O* has power over *P* does not mean that *P* is devoid of influence capacity over *O*. In any relationship, then, each person may have some power over the other, one may have all the power, or neither may have superior power over the other."[8] When exercising power, a negotiator must consider what he is concomitantly risking. Consequently, the negotiator's inherent power is limited as the potential costs of his noncompliance increase. Over time, the negotiator becomes more dependent upon his opponent's resources; he takes more risk each time he refuses to accept an offer. This reward-cost/power-risk relationship is also implied by J. C. Harsanyi: "A realistic quantitative description of *A*'s power over *B* must include, as an essential dimension of this power relation, the costs to *A* of attempting to influence *B*'s behavior."[9] In other words, the attempt to influence *B* has attendant to it both the measure of *A*'s power and the measure of risk—potential costs—that *A* is willing to incur.

This suggests that functional power can be altered by one negotiator's ability to increase the consequences of noncompliance for the other negotiator; that is, the ability of *A* to force *B* into taking a high risk. *B* determines his risk (and possible reward) by comparing his reward-cost outcome for compliance with that for noncompliance—the greater the cost of noncompliance, the greater is *A*'s power over *B*. This analysis implies the observation that as power relationships are altered, so are the corresponding measures of risk. The integration of risk and power as determinants of argument is inevitable in negotiation. The power that each negotiator attributes to his opponent, as well as the amount of risk an individual is willing or able to take, can significantly influence the statements spoken across the bargaining table. In mixed-motive interaction, the process of argumentation and the product of negotiation rely heavily upon shifts in power perceptions, not solely —and perhaps not at all—upon the inherent power of the contenders.

The process of *compromise* is distinguished by a willingness to consider alternative proposals. The contenders initiate the session by presenting their one most preferred position, called a *maximum* disposition.[10] They gradually

[8] Wally D. Jacobson. *Power and Interpersonal Relations* (Belmont, Calif.: Wadsworth, 1972), p. 21.

[9] John C. Harsanyi, "Measurement of Social Power, Opportunity Costs, and the Theory of Two-Person Bargaining Games," *Behavioral Science,* 7 (1962), 70.

[10] This analysis is based on the model offered by David H. Smith.

move toward other alternatives until reaching the point beyond which neither will move. This "final offer" is termed the *minimum* disposition point. The relative positions of the minimum dispositions determine what type of compromise must occur to reach agreement. In Case I, the minimum dispositions of the two participants overlap; negotiators, then, must compromise on the most appropriate alternative from among a set of many suitable ones. Negotiation in Case I, therefore, involves an identification of the overlap and a decision on the most mutually acceptable position within that latitude.

A situation that initially presents choices equally unacceptable to both parties or a situation in which the only proposals are mutually unacceptable leads to another form of compromise. In Case II the participants are deadlocked and are forced to seek additional strategies or alternatives. While the game theory approach does not explain this situation to our total satisfaction, it does help clarify it. Stevens explains that the mutually unacceptable alternatives result in an "avoidance-avoidance conflict situation."

> The avoidance-avoidance conflict choice situation is inherently and generically of such a nature that the game take-it-or-leave-it must create strong motivations to discover alternative responses. In this situation the individual cannot immediately make up his mind which goal to elect. He is in a behavioral equilibrium such that strategies other than those available in the take-it-or-leave-it are psychologically necessary if the game is to be an appropriate one for resolving the transaction.[11]

When such alternatives are revealed, the parties are involved in a collaborative effort to maintain conditions under which disagreement rather than termination is possible. Gradually, however, the contenders must lessen disagreement to reach a solution. In so doing, they participate in debate, a form of argumentation. In Douglas Ehninger's terms, they are engaged in a critical and cooperative investigation. Particularly fitting this view of negotiation, Ehninger claims that argument encompasses those situations in which mutually exclusive, or noncotenable, positions present themselves. Both arguers present their perspectives on the issue, and both may examine, probe, and correct the other's viewpoints. Hence, they produce a dialectic, moving toward mutually acceptable conclusions.[12]

The notion of a dialectic implies a fourth dimension of argument in negotiation—*prediction*. The argumentative process culminating in agreement is significantly dependent upon behavioral predictions based on the expectations of the participants. Schelling analyzes this position and concludes that "the outcome of a bargaining process is to be described most immediately, most straightforwardly, and most empirically in terms of some phenomenon of stabilized convergent expectations."[13] The coordinated choice, or outcome, occurs via the argumentative dialectic discussed above. Through the dialectic, each participant seeks to increase the accuracy of his predictions concerning his opponent's position. The process is in a sense self-supporting, for as each party seeks to learn more about his opponent, he also seeks to conceal his own minimum disposition, frequently attempting to indicate that it is nearer his maximum disposition than is actually the case. The strategies or tactics used to maximize each party's own preferred position are based on the predictions each party

[11] Carl M. Stevens, *Strategy and Collective Bargaining Negotiation* (New York: McGraw-Hill, 1963), p. 18.

[12] Douglas Ehninger, "Argument as Method: Its Nature, Its Limitations and Its Uses," *Speech Monographs*, 37 (1970), 101-110.

[13] Schelling, p. 114.

forms. An arguer must predict how committed his opponent is to his expressed position when attempting to decide whether he must present another alternative, or if he can expect his opponent to make the first move.

The process is analogous to a game of "chicken." The first expressed willingness to move from a position will be taken advantage of, and the person expressing the willingness may "lose"; but if neither participant swerves from his initial course, both will surely lose. Psychologically, perhaps, the last person to move is invested with strength. As Schelling has suggested, though, "commitments are not altogether clear; each party cannot exactly estimate the costs and values to the other side."[14] Therefore, strategies to conceal a minimum disposition and strategies to reveal more desirable positions are essential. Estimates of an opponent's commitment to various claims in negotiation can determine the course of the argumentative dialectic, the risks a contender will be willing to take, the functional uses of power, and even the eventual settlement for which each participant can estimate that he could do no better.

A final class of variables affecting negotiators' behavior can be distinguished as *situational* variables. As in all interpersonal interaction, the actual verbal exchange cannot adequately be analyzed without consideration of the context in which it occurs. As Sereno and Mortensen observe: "Every social situation forms a pattern, a context, that governs the ongoing flow and effects of interpersonal behavior."[15] Situational variables, then, refer to external conditions uncontrollably (for the most part) imposed upon interpersonal encounters. A multitude of such contextual variables are crucial determinants of what statements, offers, and behaviors are permissible within bargaining. Throughout this discussion we have alluded to several ways in which situation affects negotiation—it may suggest what compromises would be acceptable; it might aid the bargainer in making predictions about his opponent's minimum disposition; it may assist contenders in attributing power to their opponents; it might assume a role in convincing a bargainer that a particular risk is worthwhile.

One particularly relevant variable in the external situation is the urgency of the issue. The degree to which a decision must be reached in a specified, predetermined amount of time relates directly to notions of dependency in power. For example, if a union is threatening a strike on a particular date, and management could not absorb the losses a strike would entail, the time pressures would certainly affect management's negotiation behavior, would affect the risks management might take when costs are high, and may also affect subsequent satisfaction with the settlement. The effects of a situation may be reflected in a shift of minimum disposition regarding wages or concessions concerning benefits, working conditions, etc. In any case, labor gains a power advantage as a result of the bargaining context. This example serves to illustrate the outstanding roles that situation and context assume as determinants of negotiation interaction.

The model of negotiation that we proffer is based on the belief that negotiation is a mixed-motive interaction, and, as such, it utilizes the dialectic of argument to form converging opinions of a best solution. Argumentation, then, is the vehicle by which the conflict is resolved.

In the following portion of this paper, we shall report the results of two

[14] Schelling, p. 39.

[15] Kenneth K. Sereno and C. David Mortensen, *Foundations of Communication Theory* (New York: Harper, 1970), p. 292.

exploratory empirical studies. These experiments were designed with the expectation of developing useful categories for subsequent content analysis. A corollary intent was to determine empirically whether the dimensions that we have selected are indeed significant; that is, we desired to answer the question: Does the manipulation of a given dimension have a significant effect on the negotiation process or outcome? While we recognize that isolating particular dimensions for analysis may mask significant interaction patterns among all dimensions, we determined that it was first necessary to describe fully each individual dimension and then examine all dimensions in an interactive experimental setting. Hence, we selected to explore two dimensions in this investigative, category-generating research. Experiment I examines prediction—specifically perceptions of minimum dispositions; Experiment II deals with urgency of the issue as a possible indicator of subsequent negotiator satisfaction.

Experiment I

Experiment I was designed to examine at least one aspect of the prediction dimension. We have suggested that through the argumentative dialectic, participants seek to gain maximum information about their opponents' positions. Our model suggests, then, that one's ability to predict may be related to bargaining outcome. This experiment investigated that issue with the hope that a useful category for future content analyses would emerge. We believed that the ability to perceive accurately an opponent's minimum disposition at a given point during bargaining would be a good indicator of a negotiator's skills. The implication is that a potentially successful negotiator will make use of the knowledge he possesses in advancing further arguments. Based on this reasoning, the following hypothesis emerged:

Negotiators who more accurately predict their opponents' minimum dispositions will gain more favorable settlements than negotiators who make inaccurate estimates.

Since the experiment reported below involved mock out-of-court cases, "favorability" was operationalized in the following fashion: for plaintiffs, settlements became "more favorable" as they approached the total amount for which the defendant was being sued. Conversely, for defendants, settlements became "more favorable" as they approached zero. The "more accurate predictor" of a pair was the one with a lesser discrepancy between his prediction of his opponent's minimum disposition and the opponent's *own* statement of his minimum disposition.

Method

Subjects. Undergraduate students (N = 52) enrolled in speech communication classes at the University of Nevada, Las Vegas, served as subjects.

Design and Procedures. Subjects were randomly placed in dyads and then arbitrarily assigned the role of plaintiff or defendant. The experimenter briefly explained and illustrated to the students the concepts of maximum and minimum disposition presented above and determined that all subjects understood those concepts.

Subjects then received a brief description of a mock litigation in which the defendant was being sued for $10,000 following an automobile accident. Fifteen minutes were allotted for bargaining. After five minutes, and again after ten minutes, the experimenter halted negotiation and instructed subjects to indicate their own minimum disposition and to make an estimate of their opponent's minimum disposition. The

minimum dispositions were to be recorded in dollar amounts, not via a statement such as "He is willing to pay for my medical expenses." At the end of fifteen minutes, subjects were instructed to record the amount of the cash settlement upon which they had agreed.

Results

It was predicted that the more successful negotiators would have made more accurate estimates of their opponents' minimum dispositions. The data obtained suggest that the hypothesis is tenable.

Data were analyzed in the following manner: for each subject, a percentage discrepancy (%d) measure was calculated for each estimate that had been made. Percentage discrepancy represented the difference between a subject's estimate of his opponent's minimum disposition and his opponent's own statement of minimum disposition. The percentage of the difference was calculated on the total amount for which the subjects were negotiating ($10,000). For example, if a plaintiff estimated the defendant's minimum disposition to be $3000, and the defendant stated his own minimum disposition as $1500, the resulting %d would be 15%. The difference between $3000 and $1500 is $1500; $1500 is 15% of $10,000.

Percentage discrepancy measures were then correlated with the dollar settlements. Plaintiff and defendant data were separated for the correlations, since settlement favorability was operationalized in opposing directions for plaintiffs and defendants. Table 1 reports the results of the correlations.

In all cases, correlation coefficients were in the predicted directions. Only for Time 2 (two-thirds of the way through bargaining), however, were they significant beyond .05. While there is a relationship between estimation and outcome, this relationship becomes more pronounced as bargaining progresses.

Discussion

It is not possible from this investigation to ascertain fully the relationship between prediction and negotiating ability, but several conclusions are suggested.

First, the dimension of prediction appears closely related to the negotiated outcome. Although this experiment did not directly study bargaining strategies, one may now posit further research questions in this regard: What distinguishing communicative strategies are typically employed, the success of which are directly related to knowledge of the opponent's position? A corollary to this question poses four alternatives, which may be specifically addressed in future content analysis research.

(1) Do successful negotiators intentionally or consciously employ communicative strategies that conceal their own minimum dispositions? or (2) Are successful negotiators merely adept at gleaning their opponents' minimum dispositions from statements made during bargaining? or (3) Do unsuccessful negotiators make communicative "errors" that reveal their minimum dispositions, hence granting their opponents a strategic edge? or (4) Do unsuccessful negotiators fail to exploit opportunities to perceive their opponents' minimum dispositions?

TABLE 1

CORRELATIONS BETWEEN %D'S AND SETTLEMENTS FOR PLAINTIFFS AND DEFENDANTS

	Plaintiff %d, Time 1	Plaintiff %d, Time 2	Defendant %d, Time 1	Defendant %d, Time 2
Settlement	—.292	—.489*	.371	.516*

*Significant at .05.

These questions bring to the forefront the larger conceptual and theoretical issue of the relationship between *predictive* ability as an indicator of *communicative* ability and eventual outcome. While prediction cannot be the sole determinant of success, it is probably a determinant of the kinds of arguments that a successful negotiator marshalls.

Two specific suggestions for further probative work in this area can be made here. In an attempt to determine a possible answer to the four alternative questions posed above, one might pair negotiators with previous records of success. Content analyses of these sessions may in turn suggest which communicative and predictive strategies consistently point toward success.

Second, such content analyses and subsequent subject investigation may also suggest whether successful negotiators are more conscious of the advantages gained by making predictions and estimates. Successful negotiators may exhibit an awareness of an interactive, rather than a linear, view of the communication process. Criteria for content analyses could be developed whereby coders could determine the extent to which a statement is in response or reaction to an opponent's statement or offer.

A second major area that warrants attention relates to the experimental finding that the correlation between Gd and settlement increases in the predicted direction as bargaining time increases. One explanation for this occurrence may be that early negotiation time is spent more in information exchange and less in offer and counter-offer. Certainly, as more communication occurs, more is revealed —hence, better predictions can be made. An alternative explanation is that the soon-to-be-successful negotiator had already gained a strategic advantage by the second time estimates were recorded. This advantage may well account for his superior knowledge of his opponent's position.

It is apparent, then, that prediction is a significant dimension of the communicative/argumentative process evident in negotiation. Further research should reveal the entire range of this dimension's theoretic and practical impact.

Experiment II

Experiment II was designed to examine aspects of the argumentative dimensions we have termed *situation*. We suggested earlier that the urgency with which a settlement must be reached may affect the claims exchanged during bargaining. The demand to make rapid and numerous concessions (moves away from one's maximum disposition) probably affects the perceptions a negotiator has following the bargaining session. This experiment examined subjects' various perceptions of the settlement and of the negotiation process under varying conditions of "urgency." The following hypotheses were examined.

1. The more time subjects are given to reach a settlement, the more satisfied they will be with the settlement itself.
2. The more time subjects are given to reach a settlement, the more satisfied they will be with the process utilized to reach that settlement.

The experimenters surmised that when given a generous amount of time, i.e., under less situational pressure, subjects will believe that they were able to consider carefully all aspects of the conflict. Under restrictive, short time limits, on the other hand, subjects will likely believe that they were forced into a hasty, unconsidered decision.

Two additional hypotheses considered the relationship between "satisfaction with settlement" and the settlement itself, and the relationship between "sat-

isfaction with process" and the settlement.

3. Regardless of the amount of time allowed for negotiation, there will be a direct relationship between "satisfaction with settlement" and the amount of the settlement.
4. Regardless of the amount of time allowed for negotiation, there will be a direct relationship between "satisfaction with process" and the amount of the settlement.

For plaintiffs, we anticipated a positive correlation between satisfaction and settlement, for defendants, a negative correlation. It seems reasonable to expect satisfaction to relate with outcome whether or not the issue involved is "urgent"—people who "win" are generally happier than those who "lose." Anyone, however, should be more pleased when given sufficient time to analyze and resolve a conflict.

Method

Subjects. Undergraduate students (N = 168) at the University of Nevada, Las Vegas, served as subjects. Subjects were enrolled in classes in the Department of Speech and the College of Hotel Administration.

Design and Procedures. The experimental paradigm is similar to the one reported above: subjects were asked to settle a mock litigation out of court. In this experiment, however, subjects were not interrupted during bargaining to make estimates of minimum dispositions. Rather, they bargained for the entire time allocated to their experimental condition.

Subjects were randomly assigned to dyads, and dyads were randomly assigned to a treatment group. All groups negotiated the same case from the same set of mock legal facts. The case involved a liability suit for damages suffered in a fall on the edge of the defendant's property. The only difference between conditions was the amount of time allotted for reaching a settlement. Group I was given ten minutes, Group II twenty minutes, and Group III thirty minutes. At the end of the specified time, subjects were instructed to record the number of dollars, between $0 and $10,000, on which they had agreed. Instructions prior to the opening of the negotiation session explicitly stated that the case could not be taken to court and that a settlement must be reached within the time limit.

Subjects were then administered an evaluate six-scale, bipolar adjective test. The instrument was designed to measure subjects' satisfaction with the overall negotiation experience. The satisfaction instrument was divided into two independent parts. Scales 1-3 rated subjects' perceptions of the settlement that had been reached. The adjective pairs fair-unfair, good-bad, and successful-unsuccessful were employed. On the final three scales, subjects rated their perceptions of the process in which they had just been engaged. The adjective pairs pleasant-unpleasant, meaningful-meaningless, and interesting-boring were utilized here.

The semantic differential, then, yielded two measurements that could be utilized in analyzing the data: a judgment about the cash settlement and a judgment about the process employed to reach this settlement. Finally, the data allowed for correlative comparisons of individual satisfaction scores with the corresponding settlements.

Results

Satisfaction scores were computed by assigning the values 1-7 (negative to positive) to the various intervals of the semantic differential scales. Scales 1-3 rated satisfaction with the settlement, scales 4-6, satisfaction with the process. Tables 2 and 3 include means and stand-

TABLE 2
MEANS AND STANDARD DEVIATIONS FOR "SATISFACTION WITH SETTLEMENT" SCORES

	10 min.	20 min.	30 min.
Mean	15.14	16.86	16.71
S. D.	4.92	3.55	3.73

TABLE 3
MEANS AND STANDARD DEVIATIONS FOR "SATISFACTION WITH PROCESS" SCORES

	10 min.	20 min.	30 min.
Mean	15.38	15.50	16.61
S. D.	4.70	5.70	3.61

ard deviations for all three experimental conditions.

Hypotheses 1 and 2 were tested by calculating one-way ANOVA's based on the satisfaction means. Tables 4 and 5 show the ANOVA results. Since a significant F-ratio was obtained for the "satisfaction with settlement" ANOVA, multiple comparisons were calculated. The Tukey technique was chosen to conduct the pair-wise contrasts. As Table 6 indicates, two of the comparisons proved significant at .05.

Based on this analysis, it is apparent that Hypothesis 1 was supported. Satisfaction with the settlement increased significantly as the time for bargaining increased from 10 to 20 and from 10 to 30 minutes, though an almost imperceptible decrease occurred from 20 to 30 minutes. In general it may be suggested that time allotted influences satisfaction with the bargaining outcome. The lack of difference between Conditions II and III may suggest that after an optimal amount of time, satisfaction scores reach a plateau.

Hypothesis 2 was not confirmed. Although there was a slight overall trend in the expected direction, the resulting

TABLE 4
ANOVA: SATISFACTION WITH SETTLEMENT

Source of variation	df	MS	F	p
between	2	56.03	3.31	$p < .05$
within	165	16.93		

TABLE 5
ANOVA: SATISFACTION WITH PROCESS

Source of variation	df	MS	F	p
between	2	25.75	1.37	$p < .25$
within	165	18.79		

TABLE 6
MULTIPLE COMPARISONS FOR THE "SATISFACTION WITH SETTLEMENT" DATA

Comparison	q	Simultaneous Confidence Intervals
$X_I - X_{II} = (-1.72)$	$-5.70^{\bullet}$	$-1.72 \pm 1.001 = (-2.721, -.719)$
$X_I - X_{III} = (-1.75)$	$-5.79^{\bullet}$	$-1.75 \pm 1.001 = (-2.751, -.749)$
$X_{II} - X_{III} = (-.03)$	$-.099$	$-.03 \pm 1.001 = (-1.031, .971)$

•Significant at .05.

F-ratio fell short of the critical value. Apparently, satisfaction with the negotiation process is not significantly affected by the amount of time permitted for bargaining.

Hypothesis 3 was examined by correlating individual satisfaction scores with the corresponding settlements for all three conditions. Table 7 includes these results.

The test for the final hypothesis consisted of correlating "satisfaction with process" scores with settlements. The correlation coefficients are reported in Table 8.

All correlations obtained were in the predicted directions. The number of significant coefficients suggests that both Hypothesis 3 and Hypothesis 4 were supported. It is important to note, however, that opposing trends emerge when comparing the two sets of results. The correlations for "satisfaction with settlement" are more pronounced under conditions with limited negotiation time. The "satisfaction with process" coefficients increase with more ample negotiation time.

In sum, the following predictions were confirmed by the statistical analysis: (1) Overall subject satisfaction with the settlement is greater when time granted to reach the settlement is generous. (2) There appears to be a direct relationship between "satisfaction with settlement" and the settlement itself. (3) Further, there appears to be a direct relationship between "satisfaction with process" and settlement quality. The prediction that overall subject satisfaction with process would increase with time was not borne out by the experimental findings.

Discussion

The results of this experiment clearly indicate that the differential effects of time upon negotiators' perceptions are worthy of further analysis. Several conclusions drawn from the experiment offer implications for a dimensional analysis of argument in negotiation that can provide a framework and viewpoint for future research.

One significant conclusion may be drawn by comparing the outcomes of Hypothesis 1 with Hypothesis 3. While overall satisfaction with the settlement increases with time, individual satisfaction with the settlement becomes less related to the quality of the settlement. That is, the satisfaction scores increase with time, but their correlation with the settlement decreases with time. This suggests that while greater negotiation time yields greater satisfaction, the reason for increased satisfaction must be something other than settlement size. This apparent interaction is further supported by

TABLE 7

CORRELATIONS BETWEEN "SATISFACTION WITH SETTLEMENT" AND SETTLEMENT

	10 min.	20 min.	30 min.
Plaintiff	.641*	.520*	.269
Defendant	—.636*	—.412*	—.363

*Significant at .05.

TABLE 8

CORRELATIONS BETWEEN "SATISFACTION WITH PROCESS" AND SETTLEMENT

	10 min.	20 min.	30 min.
Plaintiff	.321	.565*	.604*
Defendant	—.400*	—.433*	—.512*

*Significant at .05.

the results for Hypothesis 4: with greater bargaining time available, "satisfaction with process" relates more closely to the quality of the settlement. It seems plausible to conclude, then, that when a settlement is reached hurriedly, settlement size is the overwhelming factor in determining high satisfaction. When a settlement is reached under more leisurely circumstances, however, satisfaction is determined primarily by analysis of the process—or at least by some factor other than settlement size. In other words, under Condition III, it was possible to be very pleased with the process, yet unhappy about the agreement. Conversely, under Condition I, it was likely that subjects who "won" (received high quality settlements) were less satisfied with the process employed to yield agreement.

The most important implication of the findings offered here is the reaffirmation of our earlier claim that outcome-oriented models are inadequate. The results obtained in this experiment clearly suggest that content analyses ought to be conducted to comprehend fully the communicative patterns responsible for the observed relationships between satisfaction, time, and settlement size. A cursory glance at the human dynamics of negotiation might only suggest that "winning" (if winning is defined relative to settlement size) determines the attitudinal response. As we noted earlier, though, one only "wins" relative to his own goals. This research suggests that one of those other goals or values concerns the nature of communication occurring during bargaining: the ramifications of a negotiation session extend beyond the simple terms of the agreement. Participants' subsequent attitudes and behaviors may in part be determined by bargaining table interaction. For example, the results of a first encounter between two contenders may well influence their behaviors in a second negotiation.

The failure to confirm Hypothesis 2, when compared with the correlation results, also yields interesting implications. Although overall satisfaction with the process was relatively constant across conditions, that measurement correlated significantly for all but plaintiffs in Condition I. This again suggests that more than outcome must be examined. Two questions for future inquiry present themselves: (1) What interaction patterns occur that allow "losers" to be highly satisfied with the process by which they "lost"? (2) What interaction patterns occur that allow "winners" to be dissatisfied with the process by which they "won"?

A final consideration is the issue of time effects and settlement size. Although this experiment did not explore that relationship, a communication perspective toward negotiation suggests that such investigation may prove significant. If length of bargaining time does not affect outcome, then advantages gained through increased time are solely "human" or extra-negotiation advantages: if the only goal is reaching a settlement, however, then participant satisfaction might readily be sacrificed in order to conserve time and reduce bargaining costs. If increased time tends to create consistent advantages for one party, then the opponent may be acting rationally if he forces an early settlement. In any case, the relationship between time and settlement size should be examined as an important aspect of the situational dimension.

Although many other situational factors may affect communication in negotiation, this experiment has uncovered theoretically meaningful claims regarding the urgency of the issue. Further, the categories developed here promise to be useful in observing future negotiation sessions.

Conclusion

The purpose of this paper has been twofold: to present a communication-centered model of the negotiation process and to explore empirically some dimensions of that model. The results appear promising in light of the claims confirmed here and the notions for further investigation that have been explicated. The task now is to exploit further the observational categories that emerged herein and to continue the exploration for additional categories. Perhaps in having identified the communicative process of negotiation as argumentation, a foundation has been laid for a better theoretical and functional understanding of the negotiation process itself.

PERCEIVING COMMUNICATION CONFLICT

THOMAS J. SAINE

THREE theoretical traditions are primarily responsible for the current social psychological interest in human conflict. Group-training theorists have contended that conflict is a natural, human occurrence, which emerges as individuals attempt to cope with role insecurities, dependence, and the desire for social acceptance.[1] By manipulating reward structures, game theorists have been able to study the processes whereby outcomes are negotiated in competitive situations.[2] Consistency theorists have investigated the effect of intra-communicator conflict, generated by counterattitudinal role enactment, on attitude structures.[3]

These traditions are similar in at least one respect. Each has promoted the study of conflict effects. In other words, researchers have contrasted the impact of high versus low conflict situations on epistemic processes, including attitude change, and communicative processes, including negotiated outcomes to interaction. Much remains to be learned about what causes conflict to occur and how or when or if people differ in their perceptions of conflict. For example, we do not know what information processing skills affect the perception of conflict. And we do not know what informational characteristics of the communication environment are necessary to enable an observer to judge that conflict has occurred or will occur.

This paper reports findings of experiments conducted to test the adequacy with which information processing theory predicts individual ability to perceive conflict and rate its severity. This relationship is of particular interest to communication theorists because it places the study of conflict perception within an understandable context of other related decoding behaviors.

Information Processing

The term information processing refers to the ability of an interactant to comprehend and use the alternate meanings associated with a stimulus and to integrate that information into his conceptual system in such a way that it relates to previously acquired data without dissonance or stress.[4] Two systemic properties are typically associated with the processing of information: *cognitive dimensionality*[5] and *integrative rules*.[6] Although many theorists have attempted

Mr. Saine is assistant professor of speech at the University of Florida. *He expresses thanks to Carl Wattenbarger for assistance in conducting the experiment.*

[1] See Leland P. Bradford, Jack R. Gibb, and Kenneth D. Benne, eds., *T-Group Theory and Laboratory Method: Innovation in Re-education* (New York: Wiley, 1964).

[2] See Elton B. McNeil, ed., *The Nature of Human Conflict* (Englewood Cliffs: Prentice-Hall, 1965).

[3] Robert P. Abelson, Elliot Aronson, William J. McGuire, Theodore M. Newcomb, Milton J. Rosenberg, and Percy H. Tannenbaum, eds., *Theories of Cognitive Consistency: A Sourcebook* (Chicago: Rand McNally, 1968).

[4] Harold M. Schroder, Michael J. Driver, and Siegfried Streufert, *Human Information Processing* (New York: Holt, 1967), pp. 3-7.

[5] Schroder et al., describe dimensionality: "Dimensions are the units of conceptual functioning and represent the elements or 'content' of thought. Judgments, attitudes, decisions, or perceptions concerning a range of stimuli can be based on few—or many—dimensional units of information (p. 7)."

[6] Rules are the conceptual tools which allow an individual to combine and reorganize cognitions. The greater the number of integrative rules, the greater one's ability to utilize diverse information.

to label, describe, and statistically predict individual differences in information processing, two theories in particular appear suited to the study of conflict perception because of their treatment of the two aforementioned conceptual properties and their overall predictive power.

Cognitive Complexity Theory

Cognitive complexity theory represents a reconceptualization and extension of George Kelly's "psychology of personal constructs."[7] Kelly argued that personal constructs (actually bipolar adjective pairs, such as good-bad, effective-ineffective, like-dislike, etc.) are the conceptual tools whereby man is able to construe meaning and differentiate among similar cognitive and perceptual objects.[8] Each individual has a limited universe of personal constructs which he may draw upon as he attempts to interpret life events. Theoretically, the greater the number of personal constructs an individual is able to bring to bear in understanding events, the greater his ability to comprehend fully the implications of an act and the higher his level of information processing.

Bieri used the label "cognitive complexity" to describe the relative complexity of personal construct systems.[9] Complexity theory stipulates that high complexity interactants, when confronted with complex informational stimuli (complex because of the novelty, inconsistency, difficulty, or ambiguity of the stimulus), are better able to comprehend, retain, and perceptively apply the information toward some post-communication judgment. Research has demonstrated that high complexity decoders, given complex informational conditions, are better able to predict the behavior of others,[10] form more elaborate and multivalent personal impressions,[11] engage less in leveling (the omission of detail in recall) and assimilative projection (the perception of others in terms of self),[12] and generally glean more information from messages[13] than do low complexity decoders.

Further, research suggests that cognitive complexity has an important and measurable influence on conflict perception. Tripodi and Bieri found that high complexity subjects incorporated significantly more conflicting themes in a story-completion task and were significantly more certain of their judgments regarding conflicting information than were low complexity subjects.[14] It was reasoned that "cognitively complex Ss project more conflicting themes because of their greater versatility in conceptualizing dimensions of behavior."[15] These findings are consistent with results reported by Leventhal and Singer which

[7] George A. Kelly, *The Psychology of Personal Constructs* (New York: Norton, 1955).

[8] Contemporary literature refers to "personal constructs" as "judgmental dimensions."

[9] James Bieri, "Cognitive Complexity-Simplicity and Predictive Behavior," *Journal of Abnormal and Social Psychology*, 51 (1955), 263.

[10] Bieri, 263; Howard Leventhal, "Cognitive Processes and Interpersonal Predictions," *Journal of Abnormal and Social Psychology*, 55 (1957), 176-180.

[11] Louis J. Nidorf and Walter H. Crockett, "Cognitive Complexity and the Integration of Conflicting Information in Written Impressions," *Journal of Social Psychology*, 66 (1965), 165-169; Paul S. Rosenkrantz and Walter H. Crockett, "Some Factors Influencing the Assimilation of Disparate Information in Impression Formation," *Journal of Personality and Social Psychology*, 2 (1965), 397-402.

[12] Richard M. Lundy, "Assimilative Projection and Accuracy of Prediction in Interpersonal Perceptions," *Journal of Abnormal and Social Psychology*, 52 (1956), 33-38; Leonard Berkowitz, "Leveling Tendencies and the Complexity-Simplicity Dimension," *Journal of Personality*, 25 (1957), 743-751.

[13] Tony Tripodi and James Bieri, "Information Transmission in Clinical Judgments as a Function of Stimulus Dimensionality and Cognitive Complexity," *Journal of Personality*, 32 (1964), 119-137.

[14] Tony Tripodi and James Bieri, "Cognitive Complexity, Perceived Conflict, and Certainty," *Journal of Personality*, 34 (1966), 144-153.

[15] Tripodi and Bieri, "Cognitive Complexity, Perceived Conflict, and Certainty," 150.

indicate that high complexity decoders express a preference for information related to the inner states of principals in a hypothetical incident, while low complexity decoders search for statements regarding surface qualities.[16] Following a similar line of reasoning, Press, Crockett, and Rosenkrantz predicted and found evidence to support the contention that high complexity individuals experience significantly less difficulty in learning conflicting (unbalanced) social structures than do low complexity individuals.[17] The tentative conclusion drawn from these studies is that high complexity interactants, due to their ability to create and tolerate conflicting perspectives on human behavior, are more sensitive to interpersonal conflict than are low complexity interactants.

Conceptual Structure Theory

Conceptual structure theory is particularly attractive to communication theorists because of the strong emphasis placed on the role of the communication environment in decoding behavior. Schroder, Driver, and Streufert theorized that one's level of conceptual structure and the complexity of the communication environment interact to affect the level at which information can be processed.[18] A number of different factors act either to increase or decrease the complexity of the communication environment, including information load (the rate and/or amount of information which is made available to decoders), information diversity, novelty of the situation, severity of possible outcomes, and subject involvement or interest.[19] Excessive or inadequate conditions for any of these factors create a below optimum environment for the processing of information.

The specific relationship between conceptual structure and environmental complexity can be represented as two inverted U-shaped curves, with the curve for low complexity persons being significantly lower in the moderate condition of environmental complexity than the curve for high complexity persons. As the complexity of the communication environment increases toward excessive complexity, information processing level decreases to a point at which the information processing levels for both high and low complexity persons are approximately equal. In other words, conceptual structure theory predicts that the information processing level of high complexity subjects will exceed that of low complexity subjects only under moderate conditions of environmental complexity.

Research has provided strong support for this thesis. Studies have shown that high complexity decoders, under moderate conditions of environmental complexity, ask for less and utilize more information,[20] receive more information,[21] are better able to form new concepts,[22] better perform tasks requiring decision

[16] Howard Leventhal and David L. Singer, "Cognitive Complexity, Impression Formation and Impression Change," *Journal of Personality*, 32 (1964), 210-226.

[17] Allan N. Press, Walter H. Crockett, and Paul S. Rosenkrantz, "Cognitive Complexity and the Learning of Balanced and Unbalanced Social Structures," *Journal of Personality*, 37 (1969), 541-553.

[18] "'Level of conceptual structure' refers to the way an individual receives, stores, processes, and transmits information." Schroder et al., p. 8.

[19] Schroder et al., pp. 31-33.

[20] Siegfried Streufert, Peter Suedfeld, and Michael J. Driver, "Conceptual Structure, Information Search, and Information Utilization," *Journal of Personality and Social Psychology*, 2 (1965), 736-740.

[21] Peter Suedfeld and Richard Hagen, "Measurement of Information Complexity: Conceptual Structure and Information Pattern as Factors in Information Processing," *Journal of Personality and Social Psychology*, 4 (1966), 233-236.

[22] Joan Rigney, James Bieri, and Tony Tripodi, "Social Concept Attainment and Cognitive Complexity," *Psychological Reports*, 15 (1964), 503-509.

integration (the formulation of specific behavioral strategies which are interrelated[23]), and are better able to tract and integrate conflicting information[24] than low complexity decoders.

Evidence exists which suggests that these same variables also interact to influence individual ability to perceive and evaluate the severity of interpersonal conflict. Crano and Schroder investigated differences between high and low complexity persons in their ability and method of resolving conflict.[25] The results show that following a strong counterattitudinal message low complexity subjects felt a greater need to resolve conflict, used more of the available processes for reducing conflict, and used them in a more internally consistent manner than did high complexity subjects. Crano and Schroder interpreted the results to suggest that:

> As the complexity of a person's information-processing structure increases, the individual will generate more degrees of freedom in dealing with diversity. Consequently, there will be a greater number of resolution processes available to him, and these will not *necessarily* be bound by the condition of internal consistency. That is, multidimensional and alternate integrative rules will operate at more complex levels.[26]

These findings are reinforced by results reported by Streufert and Streufert which indicate that conceptual structure and failure-success interact to affect the attribution of causality for interpersonal conflict.[27] After being exposed to either conditions of increasing failure or increasing success in coping with interpersonal conflict, subjects assigned responsibility for the outcome. Results show that low complexity subjects adhered more strictly to the predictions of attribution theory (i.e., that attitudes toward group members will become more favorable with success, individuals will take more personal credit for success and less for failure) than did high complexity subjects. These findings were interpreted as evidence that high complexity persons, able to perceive an incident from multiple perspectives, are less likely to credit a single person or condition with the responsibility for either success or failure, while low complexity subjects, responding to situations in a unidimensional fashion, tend to centralize credit or blame.

Hypotheses

Ample theoretical grounds support the claim that the complexity of an individual's cognitive system influences his ability to determine whether interpersonal conflict has occurred or will occur and to assess its relative magnitude. Further, there is reason to believe that the complexity of the communication environment acts either to dramatize or minimize differences in conflict perception. One factor in the communication environment is of particular interest—*information load*. Since perceptions of conflict are based often on knowledge about the persons involved in the conflict, their relationship, and disparities in opinion, the amount of information made available to an observer should affect the ability to perceive and rate interpersonal conflict. Cognitive complexity theory and conceptual structure theory

[23] Siegfried Streufert, Susan C. Streufert, and Carl H. Castore, "Complexity, Increasing Failure, and Decision Making," *Journal of Experimental Research in Personality*, 3 (1969), 293-300.

[24] Schroder et al., p. 112.

[25] William D. Crano and H. M. Schroder, "Complexity of Attitude Structure and Processes of Conflict Reduction," *Journal of Personality and Social Psychology*, 5 (1967), 110-114.

[26] Crano and Schroder, 112.

[27] Siegfried Streufert and Susan C. Streufert, "Effects of Conceptual Structure, Failure, and Success on Attribution of Causality and Interpersonal Attitudes," *Journal of Personality and Social Psychology*, 11 (1969), 138-147.

are the sources for the three hypotheses tested in this study.

1. Cognitive complexity and information load interact to affect conflict perception, such that high complexity subjects, under moderate conditions of information load, record more instances of interpersonal conflict than do low complexity subjects, given these same communicative conditions.
2. Cognitive complexity and information load interact to affect the ability to integrate dissimilar dimensions of information in forming conflict perceptions, such that high complexity subjects, under moderate conditions of information load, combine more dissimilar dimensions of information to produce perceptions of conflict than do low complexity subjects, given these same communicative conditions.
3. Cognitive complexity and information load interact to affect the ratings of conflict severity, such that high complexity subjects, under moderate conditions of information load, assign significantly higher numerical ratings in estimating the degree of conflict than do low complexity subjects, given these same communicative conditions.

Experiment I

Method

Subjects were 92 undergraduates enrolled in sections of an introductory speech communication course who volunteered to participate. They filled out the Paragraph Completion Test developed by Schroder, Driver, and Streufert to assess the complexity of individual conceptual structures.[28] It was possible to classify subjects into conditions of "high" and "low" complexity by comparing each individual score with the grand mean for all subjects.[29] Each subject then received data on members of a hypothetical family (including information on the age, birth place, physical appearance, political affiliation, religious affiliation, educational background of each family member, etc.). Subjects were instructed (1) to survey the data on family members, (2) to pair pieces of information which represent a potential source of family conflict (e.g., mother is Catholic, father is Jewish), reporting each data pair on the "Conflict Record Form," and (3) to rate each combination (on a seven-point scale) to indicate the degree of conflict one might expect to result. Subjects were instructed to record as many sources of conflict as possible during the allotted fifteen minutes, and to use their own judgment in determining what factors interact with other factors to produce conflict.

Information load was manipulated by varying family size, while providing twelve items of information on each family member. In the sub-optimum condition, subjects were presented a two-person family (husband and wife), including the twelve pieces of information on each. Optimum information load involved a three-person family (father, mother, and daughter), while supra-optimum embraced a family of four (father, mother, daughter, and son).[30]

Three dependent measures were recorded: (1) total number of data combinations listed by each subject, (2) number of multidimensional combinations (cross-category pairs, such as the pairing of mother's place of birth with father's political affiliation), and (3) ratings of the degree of conflict.

Results

A two-way multivariate analysis of variance was performed to test the hypotheses. Results for total number of recorded conflicts showed that subjects high in complexity recorded significant-

[28] Schroder et al., pp. 189-198.

[29] Means closely approximate means reported by Streufert and Streufert, p. 141.

[30] Calculations to determine what levels of information load would constitute sub-, optimum, and supra-levels were based upon preliminary testing in the introductory speech course.

ly more instances of interpersonal conflict than did low complexity subjects ($F = 7.78$, $df = 1/86$, $p < .01$). As predicted, significant differences between cell means (see Table 1) for subjects high and low in complexity occurred in the optimum condition of information load ($t = 2.06$, $df = 86$, $p < .05$).[31] Not

TABLE 1

MEANS FOR TOTAL NUMBER OF RECORDED CONFLICTS FOR EXPERIMENTS 1 AND 2

	Sub-	Optimum	Supra-
	Experiment 1		
High Complexity	10.43	12.30	12.76
Low Complexity	8.34	9.00	11.46
	Experiment 2		
High Complexity	7.90	12.36	9.63
Low Complexity	5.20	8.64	6.44

predicted, however, was a main effect due to information load ($F = 3.87$, $df = 2/86$, $p < .05$), and the finding that the number of reported conflicts increased with increments in information load, such that low complexity subjects in the supra-optimum condition reported significantly more instances of conflict than did low complexity subjects in the sub-optimal condition ($t = 1.99$, $df = 86$, $p < .05$). Effects of the hypothesized conceptual structure by information load interaction were trivial.

Consistent with predictions, results indicated that conceptual structure and information load interact to affect the number of multidimensional (cross-category) perceptions of conflict ($F = 3.28$, $df = 2/86$, $p < .05$), such that within the optimum condition scores for subjects high in complexity were superior to scores for low complexity subjects ($t = 3.70$, $df = 86$, $p < .01$). Unanticipated was the evidence which shows this same superiority to occur under sub-optimum conditions of information load ($t = 3.11$, $df = 86$, $p < .01$) (Table 2).

TABLE 2

MEANS FOR TOTAL NUMBER OF MULTIDIMENSIONAL CONFLICTS RECORDED FOR EXPERIMENTS 1 AND 2

	Sub-	Optimum	Supra-
	Experiment 1		
High Complexity	2.57	2.90	1.76
Low Complexity	0.92	0.60	1.75
	Experiment 2		
High Complexity	2.40	2.82	2.00
Low Complexity	0.30	0.36	1.22

Tests for differences in ratings of the degree of perceived conflict revealed one important result: a significant main effect due to information load ($F = 6.21$, $df = 2/86$, $p < .01$). The pattern of cell means for subjects low in complexity followed prediction with ratings of greatest magnitude occurring under optimum conditions. Within the low complexity condition, significant differences were recorded between sub-optimum and optimum conditions ($t = 2.37$, $df = 86$, $p < .05$). In contrast, among subjects high in complexity the mean for conflict ratings was lowest in the sub-optimum cell and highest in the supra-optimum cell ($t = 3.57$, $df = 86$, $p < .01$). The hypothesized conceptual structure by information load effect on conflict ratings was only marginally significant ($F = 2.74$, $df = 2/86$, $p < .10$), though in the predicted direction.

EXPERIMENT II

Purpose

In Experiment I, the pattern of cell means for total number of conflicts recorded departed somewhat from predictions derived from information processing theory. Specifically, it was predicted that as the complexity of the

[31] See B. J. Winer, *Statistical Principles in Experimental Design* (New York: McGraw-Hill, 1962), p. 244 for computation of t based on the error term derived from analysis of variance.

communication environment increased toward a supra-optimal condition, decreases should occur in the ability to perceive conflict. Results, however, indicated that additional increases in the number of conflicts recorded occurred in spite of excessive information load. Two explanations are possible. First, environment and information processing level may be related in a linear, not curvilinear fashion as suggested by information processing theory, such that ability to perceive conflict increases as information load increases. Second, it is possible that information load in the supra-optimum condition was not sufficiently excessive to test for the inverted U-curve relationship. Experiment II is a replication of the original experiment with modification in sub- and supra-optimum treatments to provide even less information in the former condition and more information in the latter.

Method

Subjects were 59 undergraduates who volunteered to participate. As in the previous experiment, subjects were administered the Paragraph Completion Test and levels of conceptual structure were determined by comparing individual scores with the grand mean for all scores. As before, information load was manipulated by providing families of different size. In the sub-optimum condition, however, the amount of information provided was reduced by six items, while the amount of information provided in the supra-optimum condition was increased by twelve items. Information load in the optimum condition was the same as in Experiment I. Measures were taken of (1) total number of conflicts recorded, (2) number of multidimensional combinations of data, and (3) ratings of conflict severity.

Results

Tests for differences in the total number of conflicts recorded yielded a main effect for both conceptual structure ($F = 12.30$, $df = 2/53$, $p < .01$) and information load ($F = 6.37$, $df = 2/53$, $p < .01$). Comparisons of cell means showed that high complexity subjects outperformed low complexity subjects in the optimum condition, as predicted ($t = 2.51$, $df = 53$, $p < .01$). Unexpected was the superiority of high complexity subjects over low complexity subjects in the supra-optimum condition ($t = 2.16$, $df = 53$, $p < .05$). Scores in the optimum condition for both high ($t = 2.97$, $df = 53$, $p < .01$) and low complexity subjects ($t = 2.29$, $df = 53$, $p < .05$) exceeded scores in the sub-optimum condition, but failed to differ significantly from scores under supra-optimum information load. Although the order of cell means was in the predicted direction, the hypothesized complexity by information load effect was not significant.

Analysis of variance for the number of multidimensional data combinations revealed a conceptual structure main effect ($F = 9.59$, $df = 1/53$, $p < .01$). Scores for high complexity subjects exceeded scores for low complexity subjects in both sub- ($t = 2.14$, $df = 53$, $p < .05$) and optimum conditions ($t = 2.24$, $df = 53$, $p < .05$). Other treatment effects were trivial.

TABLE 3
MEANS FOR CONFLICT RATINGS FOR EXPERIMENTS 1 AND 2

	Sub-	Optimum	Supra-
Experiment 1			
High Complexity	3.71	4.00	4.89
Low Complexity	3.54	4.50	4.17
Experiment 2			
High Complexity	3.50	4.00	3.63
Low Complexity	3.40	4.36	4.22

The main effect of information load on ratings of conflict severity evidenced in Experiment I was not replicated. No effects on these ratings, including the hypothesized complexity by information

load effect on conflict ratings, were significant.

Discussion

Two experiments indicate that conceptual structure and information load are important factors in conflict perception. Although the predicted interaction effects were not consistently achieved, the pattern of cell means and results from subsequent planned comparisons suggest that the postulate of an inverted U-shaped relationship between environment and information processing level applies to conflict perception as well as to other data. Apparently, as information load increases toward an optimum condition, subject ability to perceive conflict also increases. While additional environmental stress causes some decrement in ability, these differences are not substantial. The consistent failure to achieve a statistically significant decrease in conflict perception as information load was increased to supra-optimum levels suggests a need for a modification in theory. It seems unreasonable to expect information processing level, under supra-optimum conditions, to regress to the same low level of performance which occurs under sub-optimum conditions, especially when the environmental variable is information. We can expect *information deprivation* to be a far more debilitating factor than *excessive information*. Although excessive information may cause some difficulty in processing information, it should not create a highly counterproductive communication environment. It is also possible that the *rate of decay* in level of information processing as environmental complexity increases toward supra-optimum conditions is much slower than the rate at which improvement is achieved through increases in load.

An important finding was the consistent superiority of high complexity subjects, both in the perception of conflict and in the ability to combine dissimilar dimensions of data in construing conflict, over low complexity subjects under sub- and optimum conditions of information load. Apparently, information deprivation has a more serious and restrictive impact on the information processing skills of low complexity subjects than of high complexity subjects.

The failure to account consistently for variance in rating behavior can be explained in two ways. First, the ability to detect conflict and the ability to assess the magnitude of conflict may be two different cognitive processes. Just because an individual is able to judge that conflict has occurred or will occur does not necessarily imply that he is able to rate the severity of the conflict. Second, it is possible that the nature of the experimental task may have masked the effects of the independent variables. If indeed high complexity subjects are more sensitive to conflict than lows, implying here an ability to judge accurately the magnitude of conflict, high ratings would only occur when all instances of conflict are severe. In these experiments, high complexity subjects may have rated severe conflict higher and mild conflict lower than did low complexity subjects, thereby achieving a moderate overall estimate of conflict.

It seems clear from these experiments that factors which constitute the communication environment and conceptual structure of decoders are important factors to be considered in constructing a theory of conflict perception. Information processing theory appears to provide a suitable theoretical context into which conflict perception can be fitted. Additional research is required to determine the precise impact of communication variables on the ability to identify and evaluate interpersonal conflict.

A LITERARY ANALOG TO CONFLICT THEORIES: THE POTENTIAL FOR THEORY CONSTRUCTION

LAWRENCE J. CHASE and CHARLES W. KNEUPPER

THE study of human conflict has attracted an interdisciplinary corps of scholars, resulting in a rich mixture of approaches and perspectives. However, the potential contribution of literary analysis in this area has not been generally recognized by conflict theorists. We contend that literature, particularly the novel, may serve as a source of data which can be a valuable tool for the explication and analysis of human conflict.

Connected with this belief are two important implications: (1) existing conflict theories should have literary analogs; and (2) literature can provide an impetus to the generation of "new" conflict theory. In order to illustrate the proposed relationship, we have undertaken a case study of Part I of Fyodor Dostoevsky's *Crime and Punishment*. This author and work were selected for a variety of reasons: (1) the title of the novel is suggestive of conflict; (2) it is a recognized literary classic; (3) it predates contemporary conflict models; and (4) Dostoevsky is a prominent literary figure of the "realistic school" who has drawn considerable critical attention. For example, I. A. Richards, in "The God of Dostoevsky," characterized the Russian novelist as a "prophet," "artist," and "teacher."[1] Stefan Zweig described Dostoevsky as

> the psychologist of psychologists. . . . Since Shakespeare lived and wrote we have not learned so much from any one as from Dostoeffsky about the secret sources of the emotions and the magic laws which govern their interactions; and just as Odysseus was the only mortal who ever returned from Hades and told us of his experiences there, so Dostoeffsky relates his voyages in the underworld of the soul.[2]

Moreover, Dostoevsky has previously received some consideration for the scientific implications of his work. Friedrich Nietzsche referred to Dostoevsky's work as "the most valuable psychological material known to me."[3] In 1916, an article entitled "Dostoevsky as a Psychologist" by G. W. Thorn appeared in the *London Quarterly Review*.[4] In 1927, Sigmund Freud wrote an essay entitled "Dostoevsky and Parricide."[5] And most recently, in 1971 Pavel Simonov, a noted Soviet psychophysiologist, wrote "Dostoevsky as a Social Scientist."[6] Such previous attention indicates the importance of the author and the potential for significant discovery.

To amplify the dimensions of this potential, we provide: (1) a brief summary of the plot structure of *Crime and Punishment*, with special emphasis on Part

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[1] I. A. Richards, "The God of Dostoevsky," *The Forum*, 78 (1927), 88-97.

[2] Stefan Zweig, *Three Masters* (New York: Viking, 1930), p. 204.

[3] Friedrich Nietzsche, "To Georg Brandes," *Selected Letters of Friedrich Nietzsche*, trans. and ed. Christopher Middleton (Chicago: Univ. of Chicago Press, 1969), p. 327.

[4] G. W. Thorn, "Dostoevsky as a Psychologist," *London Quarterly Review*, 125 (1916), 177-188.

[5] "Dostoevsky and Parricide," in *The Complete Psychological Works of Sigmund Freud*, XXI, ed. James Strachey (London: Hogarth Press, 1961), pp. 175-196.

[6] Pavel Simonov, "Dostoevsky as a Social Scientist," *Psychology Today*, 5, No. 7 (1971), 59-106.

I; (2) an illustration of literary analogs for contemporary conflict models; and (3) a synopsis of the major implications of this investigation.

I

Raskolnikov, the central character of *Crime and Punishment,* suffers intense psychological conflict over a decision to attempt to validate a partially developed anthropological theory. Drawing upon the ideas of Hegel and Nietzsche, Dostoevsky provides Raskolnikov with an "extraordinary man" theory. This theory is predicated upon the division of humanity into two distinct classes, extraordinary and ordinary. The extraordinary man is distinguished by his ability to utter "something new," while the ordinary individual is merely a "louse." For the extraordinary man, social constraints do not apply, and, when he perceives a desirable goal, any means used to attain that goal are justifiable. Thus, the murder of an ordinary individual, such as an old pawnbroker, may be justified as necessary to further the ideas of the extraordinary man. After initially deciding to commit the murder, Raskolnikov's uncertainty and compassion cause him to hesitate, to vacillate between acceptance and rejection of the "extraordinary man" theory, but eventually he commits the murder, and intense mental conflict continues. The intellectual and compassionate sides of his nature exert strong influences upon him, and he finally confesses his crime.

Raskolnikov's dual personality serves as a manifestation of the two conflicting forces acting within him. From the time the murder is conceived until his confession to the police, the interaction of these forces is developed in elegant detail. F. I. Evnin's "Plot Structure and Raskolnikov's Oscillations" provides an analysis of the major dilemmas with which the protagonist had to cope: "His entire progression in the novel is an uninterrupted, tortured 'change of phases' of his internal struggle."[7] The decision to commit the murder will serve as the focal point of this discussion.

Prior to the commission of the crime, Raskolnikov changes his mind several times. The first such change occurs during the trial run, where he meets the pawnbroker at her apartment. After leaving the building, he enters the street and cries:

> 'Oh God, how repulsive! Can I possibly, can I possibly . . . no, that's nonsense, it's ridiculous!' he broke off decisively. 'How could such a horrible idea enter my mind?'[8]

Once he decides to abandon his plan, he visits a tavern where he meets the poverty-stricken Semyon Marmeladov. Marmeladov recounts the story of his life, and tells of the misfortune of his daughter Sonia, who was forced to engage in prostitution to provide money for the family. Raskolnikov accompanies Marmeladov home and secretly leaves some money. The compassionate nature of Raskolnikov is aroused by Marmeladov's tragedy, and his doubt in the validity of the extraordinary man theory is reinforced:

> 'Well, and if I am wrong,' he burst out suddenly, 'if men are not really scoundrels, men in general, the whole human race, I mean,—then all the rest is just prejudice, imaginary fears, and there are no real barriers, and that is as it should be!'[9]

Raskolnikov then returns to his apartment and sleeps until late the next day. At this point, the author describes Raskolnikov's environment:

[7] F. I. Evnin, "Plot Structure and Raskolnikov's Oscillations," *Tvorchestvo Dostoevskogo,* trans. Natalie Bienstock (Moscow: Soviet Academy of Sciences, 1948), p. 170.

[8] Feodor Dostoevsky, *Crime and Punishment,* trans. Jessie Coulson, with *Backgrounds and Sources* and *Essays in Criticism,* ed. George Gibian (New York: Norton, 1964), p. 7.

[9] Dostoevsky, *Crime and Punishment,* p. 25.

> A more slovenly and degraded manner of life could hardly have been imagined, but it suited Raskolnikov's present mood. He had resolutely withdrawn from all human contacts, like a tortoise retreating into its shell, until the sight even of the face of the servant girl . . . made him shudder with revulsion.[10]

Upon awakening, he receives a letter from his mother, informing him of the upcoming marriage of his sister to a man he regards as a scoundrel. She also tells him of her plans to visit him in the near future. This event, which would alter his environment, "increases his tension and brings him face to face with decision ('Whatever happens, I must decide.')"[11] In a state of anxiety ("His heart was beating fiercely and his thoughts were wildly agitated"),[12] he goes for a walk and observes a young, apparently drunk girl wandering about in confusion. She is being followed by a dandy whom Raskolnikov suspects of having immoral intentions. He arranges for her assistance and protection by a policeman, and causes quite a commotion. As he departs, however, "an instantaneous revulsion of feeling"[13] overcomes him and he reverses himself, telling the policeman: " 'Stop! What is it to you? Drop it! Let him amuse himself!' (he pointed at the gentleman). 'What business is it of yours?' "[14] Raskolnikov's sudden change of attitude toward the situation may be attributed to his role uncertainty as an extraordinary man and to the ugliness of the entire event, which served to suddenly reinforce his "extraordinary man" theory; consequently, he decides to commit the murder.

This decision, like the other preceding it, is reversed shortly thereafter when, in a park, Raskolnikov dreams of the brutal beating of a horse. He is repulsed by the cruelty exhibited in his fantasy, and declares, "No, I shall not do it, I will not do it!"[15] Dostoevsky describes his mood in the next passage:

> He stood up, looked round as if wondering how he came to be there. . . . He was pale, his eyes glittered, exhaustion filled every limb, but he had suddenly begun to breathe more easily. He felt that he had thrown off the terrible burden that had weighed him down for so long, and his heart was light and tranquil. 'Lord!' he prayed, 'show me the way, that I may renounce this accursed . . . fantasy of mine!'[16]

But on his way home, he overhears a conversation in the Haymarket Square. The pawnbroker's sister, Lizaveta, is saying that she will not be home until 8:00 p.m. Raskolnikov, realizing this opportunity, again suddenly reverses himself and prepares to commit the crime.

II

At least three conflict models have literary analogs in *Crime and Punishment*: Raskolnikov's plight illustrates what Dollard et al., have called the frustration-aggression hypothesis (and extensions thereof);[17] the extraordinary man theory exemplifies the decision-making models proposed by Bernard,[18] Rapoport,[19] and Markus and Tanter;[20] and Dostoevsky's presentation of the motives and needs of Raskolnikov resembles the instinctual

[10] Dostoevsky, pp. 25-26.
[11] Evnin, p. 171.
[12] Dostoevsky, p. 37.
[13] Dostoevsky, p. 47.
[14] Dostoevsky, p. 47.
[15] Dostoevsky, p. 57.
[16] Dostoevsky, p. 57.
[17] J. Dollard, L. W. Doob, N. E. Miller, O. H. Mowrer, and R. R. Sears, *Frustration and Aggression* (New Haven: Yale Univ. Press, 1939).
[18] Jessie Bernard, "The Sociological Study of Conflict," in International Sociological Association, *The Nature of Conflict: Studies on the Sociological Aspects of International Tensions* (Paris: UNESCO, 1957).
[19] Anatol Rapoport, *Fights, Games, and Debates* (Ann Arbor: Univ. of Michigan Press, 1960).
[20] Gregory B. Markus and Raymond Tanter, "A Conflict Model for Strategists and Managers," *American Behavioral Scientist*, 15 (1972), 809-834.

view of aggression which has been discussed by such theorists as Ardrey[21] and Lorenz.[22]

The frustration-aggression hypothesis, as amended by Miller et al.,[23] asserts that "the occurrence of aggression always presupposes the existence of frustration, and . . . frustration produces instigations to a number of different types of response, one of which is an instigation to some form of aggression."[24] Extending this line of reasoning, Newcomb formulated the autistic hostility hypothesis:[25]

> Briefly, [the thesis] is this: the likelihood that a persistently hostile attitude will develop varies with the degree to which the perceived interpersonal relationship remains autistic, its privacy maintained by some sort of barriers to communication. . . . If communication with others is cut off, the initial framework responsible for the perception of hostility is less likely to be modified than if inter-personal give-and-take is continued.[26]

In *Crime and Punishment* the interpersonal relationship in question exists between Raskolnikov and society, rather than with Alyona Ivanovna, the pawnbroker. His anxiety, resulting from the constant interplay and exchange of personalities (the intellectual vs. the compassionate), as well as from the "slovenly and degraded manner" in which he lived, led to intense frustration. The existence of this potentially hostile attitude is perpetuated by his inability to resolve his cognitive conflict, and is enhanced by his determination to isolate himself (in relation to Raskolnikov's isolation, Dostoevsky narrates, "Such behaviour is found among monomaniacs when they have concentrated all their energies on one point"[27]). Thus, this self-imposed barrier to communication prevented him from modifying or rejecting his misanthropic theory. Dostoevsky indicates that Raskolnikov does in fact renounce his theory in favor of Christianity in the epilogue, and that his decision, influenced primarily by his relationship with Sonia Marmeladova—"Could not her beliefs become my beliefs now? Her feelings, her aspirations, at least"[28]—resulted from the breakdown of this communication barrier.

Raskolnikov's frustration and isolation is complemented by a motif which recurs throughout the novel: the motif of freshness. Prior to committing the murder, Raskolnikov visited the Petersberg Islands, and the "greenery and freshness" provided him with a temporary respite from the "stuffiness, the jostling crowds, the bricks and the mortar" of the city. It was in this park that he dreamt of the brutal beating of the horse by the peasant Mikolka, the fifth peripateia of Part I and the last instance in which Raskolnikov is repulsed by the act he plans to commit. The freshness motif represents an escape for Raskolnikov, whereby he is able to free himself from the self-imposed isolation which had been the chamber of his torment. This self-imposed isolation, which had caused him so much anxiety, was initiated in conjunction with the sanctions of his extraordinary man theory.

The theory had originally been conceived as a kind of cure for Raskolnikov's unhappy situation. The extraordinary man theory obviated the necessity for Raskolnikov to inhibit his actions, as he would answer to no one, and

[21] Robert Ardrey, *African Genesis* (New York: Atheneum, 1961).

[22] Konrad Lorenz, *On Aggression*, trans. Marjorie Kerr Wilson (New York: Harcourt, 1966).

[23] Neal E. Miller et al., "The Frustration-Aggression Hypothesis," *Psychological Review*, 48 (1941), 337-342.

[24] Miller et al., 338.

[25] Theodore M. Newcomb, "Autistic Hostility and Social Reality," *Human Relations*, 1 (1947), 69-86.

[26] Newcomb, 69.

[27] Dostoevsky, *Crime and Punishment*, p. 26.

[28] Dostoevsky, p. 527.

served only his own will. He was above social and ethical constraints which kept the ordinary man or "louse" in line. His ability to utter a "new word" enabled him to transgress social barriers "in the name of better things."

'[I]f it is necessary for one of them, for the fulfilment of his ideas, to march over corpses, or wade through blood, then in my opinion he may in all conscience authorize himself to wade through blood.'[29]

The extraordinary man theory represents another conflict model. The autonomous being described is similar to the decision-maker, and especially similar to that group of strategists which Rapoport has labeled the "abstractionists" and the "cool young men."[30] The sole criterion for conflict in this model is whether an advantage is to be gained, regardless of moral, psychological, or other factors. An example of the decision-making model may be found in formal theory, in which participants choose among competing strategies in order to maximize their gains and minimize their costs. Other factors, such as ethics, values, or the psychological aspects of the players, are normally extraneous to this approach. Markus and Tanter describe the value of this type of decision-making model:

The value of such a model is the level of generality it possesses due to its freedom from having to take into account the idiosyncrasies of any actual situation. By excluding these perturbations from its framework, the model achieves what is sometimes called 'elegance.'[31]

These authors criticize game-theoretical approaches on this very basis, however, due to the inability of such frameworks to include individual psychological factors which interact in "real" situations. They support the use of the "subjectively expected utility" model (SEU), an approach which had previously been used in analyzing games against nature.[32] In adapting this framework to conflict theory, Markus and Tanter comment:

[T]he problem is transformed essentially into an exercise in decision-making under *risk*. The actor still does not know for sure what will happen if he acts in a given way, but he can make certain *probability* statements about alternative outcomes. In the theory of risky decision-making, the actor is assumed to maximize his subjectively expected utility. . . . The SEU maximization principle stems from the traditional mathematical notion of the expected value of a game of chance. The expected value of a bet is obtained by simply multiplying the value of each possible outcome, o_i, by the corresponding probability of occurrence, p_i, and then summing these products across all outcomes; Symbolically:[33]

$$EV = \sum_{i=1}^{n} o_i p_i$$

By comparing this theory with Raskolnikov's extraordinary man concept, yet another similarity between the two frameworks may be demonstrated. Both the SEU actor and the extraordinary man embrace the notion of perceived utility. As Raskolnikov explains to detective Porfiry Petrovich:

'[H]e may in all conscience authorize himself to wade through blood—in proportion, however, to his idea and the degree of its importance—mark that. It is in that sense only that I speak in my article of their right to commit crime.'[34]

Thus, the extraordinary man need only examine the expected utility of his act in relation to his idea before its commis-

[29] Dostoevsky, p. 250.

[30] Anatol Rapoport, *Strategy and Conscience* (New York: Harper, 1964), p. 177.

[31] Markus and Tanter, 815.

[32] See, for example, Ward Edwards, "Behavioral Decision Theory," *Annual Review of Psychology*, 12 (Palo Alto: Annual Reviews, Inc., 1961), 473-498; and R. Duncan Luce and Howard Raiffa, *Games and Decisions* (New York: Wiley, 1957).

[33] Markus and Tanter, 816.

[34] Dostoevsky, *Crime and Punishment*, 250.

sion. Moreover, the furthering of his new idea is the *only* rationale he needs or has available to him. It is also noteworthy that Raskolnikov's final decision was influenced by his attainment of information which signified a reduction of the probable "risk of discovery."

Dostoevsky's motif of solitude or "aloneness" relates to Raskolnikov's extraordinary man theory. This isolation is mental, not physical, as Dostoevsky explains in his *Notebooks for Crime and Punishment*:

> The truth of God and the law of nature take their own, and [Raskolnikov] finally feels forced to give himself up, . . . in order to be once again part of humankind, even if it means perishing in prison.[35]

There are several clues in the novel which imply that behavior is motivated by an instinctual force. Philip Rahv states in "Dostoevsky in *Crime and Punishment*" that the murder of the pawnbroker, although "intellectually rationalized [is] inexplicable except in terms of an unconscious drive."[36] The author depicts Raskolnikov as a murderer in search of a motive, simultaneously embracing and rejecting a host of reasons for his crime. As Rahv has observed:

> The criminal himself is in his own fashion constrained to take part in the work of detection . . . because he is soon lost in the maze of his own motivation. Never quite certain as to what it was exactly that induced him to commit murder, he must continually spy on himself in a desperate effort to penetrate his own psychology and attain the self-knowledge he needs if he is to assume responsibility for his absurd and hideous act.[37]

Raskolnikov eventually forsook the psychological quest for his motive: "Life had taken the place of logic and something quite different must be worked out in his mind."[38] Dostoevsky attempts to expose the futility of employing intellectual, dialectical methods in seeking to solve the mysteries of life. George Gibian compares Dostoevky's rejection of dialectics in favor of "life" to C. G. Jung's description of man's cognitive processes.[39] In a passage which Lavrin has called "one of the best clues to Dostoevsky the psychologist,"[40] Jung characterizes misapplied intellect as:

> thinking which is a *mere equation* [italics ours], and from which nothing comes out but what we have put in. . . . [B]eyond that there is a thinking in primordial images—in symbols which are older than historical man; which have been ingrained in him from earliest times, and, eternally living, outlasting all generations, still make up the groundwork of the human psyche.[41]

Jung's conception is related to Freud's notion of the "Primal Horde," and its effects upon modern collectivities:

> [T]he group appears to us as a revival of the primal horde. Just as primitive man survives potentially in every individual, so the primal horde may arise once more out of any random collection.[42]

Dostoevsky recognizes this revival in modern man but interprets it in a more spiritual manner:

> Not a single nation has been founded in principles of science and reason. There never has been an example of it, except for a brief moment of folly. . . . Nations are built up by another force which sways and dominates them, the origin of which is unknown and inexplicable. . . . It is the spirit of life, as the Scriptures call it, 'the river of living water,'

[35] Fyodor Dostoevsky, *The Notebooks for Crime and Punishment*, ed. and trans. Edward Wasiolek (Chicago: Univ. of Chicago Press, 1967), p. 172.

[36] Philip Rahv, "Dostoevsky in *Crime and Punishment*," *Partisan Review*, 27 (1960), 425.

[37] Rahv, 399.

[38] Dostoevsky, *Crime and Punishment*, p. 527.

[39] George Gibian, "Traditional Symbolism in *Crime and Punishment*," *PMLA*, 70 (1955), 979-996.

[40] Janko Lavrin, *Dostoevsky: A Study* (New York: Macmillan, 1947), p. 53.

[41] C. G. Jung, "The Stages of Life," *Modern Man in Search of a Soul* (New York: Harcourt, 1934), pp. 129-130.

[42] Freud, XVIII, p. 123.

the drying up of which is threatened by the Apocalypse.[43]

This passage, extracted from another Dostoevsky novel, *The Possessed,* "could serve as a basic text for *Crime and Punishment,*" according to Gibian.[44] This spirit of life consists of not only evil and violent tendencies rooted in the nature of men, but also includes the good and gentle aspects of man's soul. V. V. Zenkovsky presents this dichotomy in a discussion of Dostoevsky's anthropology:

> Dostoyevsky exhibits not only the sin, corruption, egoism, and, in general, the 'demonic' element in man with unprecedented force; he exhibits *no less profoundly* the impulses toward justice and good in the human soul, the 'angelic' principle in man. The force and significance of Dostoyevsky's use of antinomies in philosophical anthropology derives fom the fact that both of the opposites are presented in their highest form.[45]

This view of man represents an anthropological double contingency. That is, man's destiny is presented as a "thromise." Thromise, as defined by John Waite Bowers, refers to "circumstances where a source controls both negative and positive sanctions for the target."[46] The target, in this context, is the future of man, and the source is that combination of instinctive, unconscious, primordial motivations which comprise the spirit of life.

III

In *Crime and Punishment,* Dostoevsky presents the reader with three distinct conditions of human existence: the self-willed misanthropic intellectual or extraordinary man, who is faithless (except in himself) and is set apart from "ordinary" people; the Christian, who is dependent upon his faith and avoids attempting to logically comprehend the mysteries of life; and those, like Raskolnikov, who are torn between both extremes.

While contemporary conflict theorists tend to take a monistic stance, attempting to explain all human conflict in terms of a single theoretical perspective, Dostoevsky operates from a fluid perspective, demonstrating the variability of motivational factors based upon contextual characteristics. In this manner, certain factors become salient depending primarily upon the parameters of the particular situation. This conceptualization suggests that a synthesis of existing models may provide a more satisfactory approach to the study of human conflict.

Other implications of this essay suggest that science and art should be viewed as complementary investigative strategies. In particular, the existence of literary analogs to conflict theories has been demonstrated. That the analogs predate the conflict theories provides for the complementary utilization of art and science via the application of propositions derived from literary analysis to theory construction. Further applications of literary analysis to the generation of scientific theory in areas such as psycholinguistics and intrapersonal and interpersonal communication could extend the scope of the interrelationship between art and science. André Gide, in a comment on Dostoevsky's work which is applicable to many authors, indicates the richness of literature as a source of ideas:

> Had he been philosopher instead of novelist, he would certainly have attempted to bring his ideas into line, whereby we should have lost the most precious of them.[47]

[43] Fyodor Dostoevsky, *The Possessed* (Harmondsworth, Middlesex, England: Penguin Books, Ltd., 1961), trans. David Magarshak.

[44] Gibian, 979.

[45] V. V. Zenkovsky, "Dostoyevsky's Anthropology," in *A History of Russian Philosophy,* trans. George L. Kline (London: Routledge and Kegan Paul, 1953), I, 418.

[46] John Waite Bowers, "Beyond Threats and Promises," address delivered on May 16, 1973 at Bowling Green State University, Bowling Green, Ohio.

[47] André Gide, *Dostoevsky* (London: Butler and Tanner, Ltd., 1926), p. 46.

COMMUNICATION AND THE INDUCEMENT OF COOPERATIVE BEHAVIOR IN CONFLICTS: A CRITICAL REVIEW

DAVID W. JOHNSON

IN order for a conflict to be managed constructively, there must be effective and continued communication among the involved parties. Communication is of basic importance in conflicts; through communication participants coordinate efforts at resolving their differences, provide information concerning their position and intentions, ventilate feelings, reason together, bargain, exercise influence, and expedite the development of settlements. The social importance of conflict management and resolution and the central role communication plays in managing conflicts constructively makes this area one of the most theoretically significant in psychology.

Definition of Conflict

Deutsch broadly defines a conflict as a situation in which "incompatible activities occur"; an incompatible activity is any action that in some way makes another action less probable or less effective.[1] More specifically, most studies of conflict are conducted in the context of a two-person, mixed-motive, incomplete information context. In a mixed-motive conflict there is a cooperative interest in reaching an agreement since both parties will be better off if an agreement is reached than if no agreement is reached, and a competitive interest for each party to make the agreement as favorable to himself as possible. In order for an agreement to be reached the cooperative interests of one or both parties must be stronger than the competitive interests.

A conflict in which there is incomplete information is a situation in which the parties are not fully aware of the strength of the competitive and cooperative forces on each other or the minimal point in the division of potential gains each will agree to. There is a great deal of information dependence upon the other party in the incomplete information conflict situation, as it is through interaction with the other that one's expectations concerning possible agreements are clarified. In the incomplete information situation there is a basic communication dilemma: an agreement can be most easily reached if both parties are open and honest about their expectations and work to ensure an equitable agreement. Yet if one party is honest and the other is deceitful, the agreement will be inequitable, in the direction of being more favorable to the deceitful party than to the honest party. Each person has the choice to be honest or deceitful in his communications about his minimally acceptable agreement points, and each person must determine which of these two alternatives the other has chosen.

Definition of Communication

A major difficulty with the present research on communication in conflict situations is the lack of conceptualization for the concept "communication." In the research literature most investigators do not define communication con-

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[1] M. Deutsch, "Conflicts: Productive and Destructive," *Journal of Social Issues*, 25 (1969), 7-8.

ceptually. They seem to assume that everyone knows what communication is, that its definition is widely known and agreed upon, and that no conceptual definition is necessary. Nothing could be farther from the truth. The literature in communication exhibits a multitude of definitions for the concept and little agreement about which definition is most useful. Dance, for example, did a content analysis of 95 definitions of communication from several diverse fields; he derived 15 distinct conceptual components of communication from those definitions. He notes that the variety of definitions has led different theorists and researchers in "different and sometimes contradictory directions" and concludes that the concept is overburdened and should be replaced with a "family of concepts."[2]

Adequate conceptualization is essential for theoretical models to organize and stimulate research. Concepts determine the behavioral field observed, which affect the principles derived from the observations, which affect the hypotheses, laws, and theories constructed. Without a conceptual definition of communication, or of various aspects of it, no theory of effective communication in conflict situations can be built. Because of the lack of conceptualization of communication, much of the research on communication in conflict situations takes on the character of a blind man stumbling in the dark searching for something to give him a frame of reference concerning the ground he is trying to explore.

Even the operational definitions of communication used in the conflict studies manifest wide differences, with some researchers operationally defining communication as the passing of notes, others as the use of a telephone linkage, and others as face-to-face discussion. The nonverbal communication involved in a person's appearance, gestures, facial cues, tone of voice, and so on, have most often been ignored. Thus while a written message stating that one intends to behave cooperatively is considered a communication message, the cooperative behavior which tacitly communicates cooperative intentions and a friendly appearance and manner are not. Two serious consequences ensue from such vagaries in operationalizing communication. First, the operational definitions used for communication have been inadequate in clarifying the concept of communication. Merton notes that the clarification of concepts ordinarily enters into empirical research in the shape of establishing operational definitions of the variables under consideration.[3] The operational definitions for an inexact, complex concept such as communication should explicate the concept with precise specification in order to make future research more theoretically significant. This has not been done in the conflict research. Second, the operationalizations of communication have been unproductive in advancing theory. The purpose of an operational definition is to serve as an index of a concept which is related to other concepts within a theory. Operational definitions serve the purpose of defining or partially defining concepts in terms of observable data in order to test the empirical validity of a theory. The lack of conceptualization of communication and the inadequacy of the operational definitions used combine to make most of the research in this area unproductive in advancing theory. Thus the operational definitions conflict re-

[2] F. E. X. Dance, "The 'Concept' of Communication," *Journal of Communication*, 20 (1970), 201-210.

[3] R. K. Merton, "The Bearing of Empirical Research on Sociological Theory," in *Social Theory and Social Structure*, rev. and enl. ed. (New York: Free Press, 1957).

searchers have used are often inconsistent with most conceptual definitions of communication, have increased the confusion concerning the conceptual definition of communication, and are a major cause of the lack of theoretical productivity in the area. The lack of conceptual definitions of communication and the confusion caused by inappropriate operationalizations of communication make it imperative that some clarity be brought to this area of conflict research.

In summarizing several of the definitions of communication, Johnson writes that because (if there is perceptual engagement) we continuously affect one another (altering perceptions, dispositions and expectations), *interpersonal communication* can be defined very broadly as any behavior, verbal or nonverbal, that is perceived by another person.[4] Interpersonal communication, however, is more commonly and specifically defined as a person sending a message to a recipient(s) with a conscious intent to affect the latter's behavior. *Effective communication* can then be defined as existing between two persons when the receiver interprets the sender's message in the same way the sender intended it. This definition of communication does not mean there is always a temporal sequence of events whereby a person thinks up a message, sends it, and someone else receives it. Communication among individuals is a process in which everyone receives, sends, thinks, interprets, and so on, all simultaneously and there is no beginning or end. Almost all of the research reviewed is experimental and, therefore, has created a temporal sequence of sending and receiving messages as part of proving causation. Smith notes that such research is contradictory to the process view of communication and, therefore, may be invalid.[5] Finally it should be noted that communication involves the transmission among individuals of symbols to which certain meanings are attached. These symbols can be either verbal or nonverbal. The exchange of ideas and experiences among individuals is possible only when both have adopted the same conventions for relating a particular graphic, nonverbal, or spoken symbol to a particular conceptual experience.

Research on communication in conflict situations has by and large ignored the theoretical literature in communication. This results in misdirected research which is irrelevant to current communication theory, repeats work that has already been done, and results in dubious assumptions being made about the communication process, all of which may invalidate much of the research which has been conducted. In addition, there is frequently an unbridged gap between the results found by researchers and the application of the findings to other conflict situations. The social importance of this area makes imperative research to validate communication procedures which can be used in actual interpersonal and inter-group conflicts. In conceptualizing the communication process in conflict situations, therefore, emphasis should be placed upon utilizing the communication literature and selecting variables which can be easily implemented and operationalized in "practical" situations.

In order to begin building a theoretical model of communication effectiveness in conflict situations the concept "communication" has to be subdivided. The central research task is to establish the conditions under which certain types of

[4] D. W. Johnson, *Reaching Out: Interpersonal Effectiveness and Self-Actualization* (Englewood Cliffs, N. J.: Prentice-Hall, 1972); and *Humanistic Social Psychology: Theory and Research* (Philadelphia: Lippincott, 1973).

[5] D. H. Smith, "Everyone Talks About Process But No One Does Anything About It," University of Minnesota, 1972. (Mimeographed.)

messages sent through certain types of channels in the context of certain situational variables will be received in such a way as to influence the receiver's decision to respond cooperatively. A *channel* is the means of conveying a message to another person; technically, the soundwaves of the voice and the lightwaves involved in seeing are the channels for much of the communication which takes place among individuals. A *message* is defined as any verbal or nonverbal stimulus that one person transmits to another; it refers to some information about a referent in a symbolic representation.

Dependent Variables

The dependent variable most often used in the studies on communication in conflict situations is the quantity of cooperative behavior. It is doubtful whether this is the most appropriate dependent variable to use. There is a large difference between accurately receiving the content of a message, making attributions concerning the intentions of the sender, making a decision to respond in either a cooperative or a competitive way, and actually responding with cooperative behavior. If, for example, a subject responds to a cooperative message with competitive behavior it is not clear whether he misconstrued or misperceived the message, distrusted the sender's intentions, or decided to exploit the person's cooperative intentions for incentive, personality, or other reasons. The dilemma involved in using messages in honest or deceitful ways may often influence a subject to disbelieve an ostensibly cooperative message. What is needed is a series of studies which focus upon the dependent variables necessary to illuminate the processes by which message characteristics affect the induction of cooperation.

Most of the games used in conflict experiments provide more options to a player faced with a cooperative opponent than to one faced with a competitive opponent. When an opponent is cooperatively oriented, the individual can gain whether he cooperates or competes. With a competitive opponent, only a competitive response will minimize the subject's losses. Thus the decision to respond cooperatively to a cooperative message may be complex. Ignoring this process provides only minimal understanding of behavior in conflict situations.

Review of Present Knowledge

Given the conceptual problems with the research dealing with the use of communication to induce cooperative behavior in conflict situations, the task remains to describe what research has been done and to assess what you have when you put it all together. In the following sections the available research is reviewed and grouped into three categories: (1) studies allowing game behavior as the only means of communication, (2) studies allowing communication through game behavior and worded messages, and (3) studies allowing communication through game behavior, worded messages, and nonverbal messages.

Studies Allowing Game Behavior as the Only Means of Communication

There are numerous studies which allow as the only channel for transmitting messages the choices made in bargaining games such as the prisoner's dilemma (PD) game. In these studies different types of strategies are used to induce cooperative behavior on the part of the subject. A *strategy* may be defined as a preplanned program of choices (including programs which have elements of randomness or probabilistic responding) in a game situation, regardless of whether

it is implemented by a subject, by a confederate of the experimenter acting as the only player, by the experimenter himself, or by a computer. Strategies then become a message indicating through behavior the resultant of the internal and external forces on the sender to cooperate or compete. Needless to say, this is a severely limited communication situation. It is assumed that all subjects attend to the pattern of choices their opponent makes and that the correspondence of meanings attached to choice patterns is high. There is no opportunity for simultaneous redundancy to increase the accuracy of the communication. It is especially difficult to ascertain intentions in a two-choice game, as a particular choice can represent an individualistic strategy, a mere response to the other's previous choice, an invitation to adopt a certain strategy, a punishment, or a signal of aggressiveness or cooperativeness. The absence of verbal, auditory, and visual channels of communication may promote atypical behavior on the part of some subjects.

Although the studies reviewed below demonstrate that certain behavioral strategies are more effective in inducing cooperative behavior than others, they do not demonstrate why. There are a variety of post hoc explanations presented to explain the results, but these explanations have not been adequately tested. Most of these studies have not tested theoretical hypotheses; they have merely tested hypothesized relationships between various strategies and the number of cooperative choices subjects make in the game. Theoretical explanations of why the strategies should affect the subject's game behavior and the measuring of intervening variables are noticeably lacking. Consequently, much of the research in this area is of little or no significance.

The studies reviewed will be organized in the following categories: (1) noncontingent vs. contingent strategies, (2) abrupt changes in noncontingent strategies, and (3) multi-choice games.

Contingent vs. Noncontingent Strategies

Many of the studies of behavior in bargaining games can be classified as testing the efficiency of contingent or noncontingent strategies in inducing cooperative behavior on the part of subjects. Perhaps the major difference between contingent and noncontingent strategies from a communication point of view is that the contingent strategy is responsive to the subject's behavior while the noncontingent strategy is unresponsive to the subject's behavior. In general, the research indicates that a variety of noncontingent strategies are not highly effective in inducing cooperation.[6]

There are two formats for studying the effects of contingent, matching strategies in bargaining games. The first involves sequential play in which, on any one trial, the subject makes his choice and then the confederate chooses. Matching takes place on the same trial under these conditions. In the sequential

[6] V. E. Bixenstine, H. M. Potash, and K. V. Wilson, "Effects of Level of Cooperative Choice by the Other Player on Choices in a Prisoner's Dilemma Game: Part I," *Journal of Abnormal and Social Psychology*, 66 (1963), 308-313; V. E. Bixenstine and K. V. Wilson, "Effects of Level of Cooperative Choice by the Other Player on Choices in a Prisoner's Dilemma Game: Part II," *Journal of Abnormal and Social Psychology*, 67 (1963), 139-147; A. A. Harrison and C. G. McClintock, "Previous Experience Within the Dyad and Cooperative Game Behavior," *Journal of Personality and Social Psychology*, 1 (1965), 671-675; C. G. McClintock, A. A. Harrison, S. Strand, and P. Gallo, "Internationalism-Isolationism, Strategy of the Other Player, and Two-Person Game Behavior," *Journal of Abnormal and Social Psychology*, 67 (1963), 631-636; W. Wilson, "Cooperation and the Cooperativeness of the Other Player," *Journal of Conflict Resolution*, 13 (1969), 110-117; and C. D. McKeown, J. P. Gahagan, and J. T. Tedeschi, "The Effect of Prior Power Strategy on Behavior After a Shift of Power," *Journal of Experimental Research in Personality*, 2 (1967), 226-233.

play situation, a same trial matching strategy in which the subject chooses first has been found to produce much greater cooperation than either a 100% cooperative or a 0% cooperative strategy[7] and either a 90% cooperative or a 10% cooperative strategy.[8]

The second format for studying contingent, matching strategies is a simultaneous choice in which matching always follows the choice made by the subject by one trial. The communication problem with the simultaneous choice situation is that a subject does not know the extent to which his own choice influenced the partner's next choice or whether the other player's intentions are reflected in his choice. In other words, the external and internal "causes" of the behavior are not clearly separated. With simultaneous play, matching strategies regularly produce significantly more cooperation than does 0% cooperation[9] but not necessarily more than does 100% cooperation.[10] Several studies have demonstrated that a matching strategy produces significantly more concurrent cooperation than does a free play condition.[11] A study by Sermat also demonstrated the effectiveness of a matching strategy in inducing cooperative behavior, and a matching strategy was shown by Crumbaugh and Evans to produce significantly greater cooperation than a noncontigent strategy having exactly the same level of cooperation.[12] Finally, in a study involving several variations of matching strategies, Bixenstine and Gaebelein found that a strategy which is slow to reciprocate cooperative behavior and slow to reciprocate competitive behavior was most effective in inducing cooperative behavior from subjects.[13]

Abrupt Changes in Strategy

Although no theoretical rationale has been presented to predict the findings, several studies have demonstrated that abrupt changes in game strategy affect subject's behavior. A sudden shift from high competition to high cooperation produces more concurrent cooperation than does high cooperation throughout.[14] A sudden shift from high competition to a matching strategy has been demonstrated to induce more concurrent cooperation than does a matching strategy throughout or a matching strategy pre-

[7] L. Solomon, "The Influence of Some Types of Power Relationships and Game Strategies Upon the Development of Interpersonal Trust," *Journal of Abnormal and Social Psychology*, 61 (1960), 223-230.

[8] R. H. Whitworth and W. G. Lucker, "Effective Manipulation of Cooperation with College and Culturally Disadvantaged Populations," *Proceedings, 77th Annual Convention, American Psychological Association*, 4 (1969), 305-306.

[9] C. M. Crumbaugh and G. W. Evans, "Presentation Format, Other Person Strategies, and Cooperative Behavior in the Prisoner's Dilemma," *Psychological Reports*, 20 (1967), 895-902; and W. Wilson, "Cooperation and Cooperativeness."

[10] S. Oskamp and D. Perlman, "Factors Affecting Cooperation in a Prisoner's Dilemma Game," *Journal of Conflict Resolution*, 9 (1965), 359-374; and W. Wilson, "Cooperation and Cooperativeness."

[11] L. Downing et al., "Profit vs. Social Motives in the Prisoner's Dilemma Game," paper presented at the Midwestern Psychological Association convention, Chicago, May 2, 1968; S. Oskamp, "Effects of Programmed Initial Strategies in a Prisoner's Dilemma Game," *Psychonomic Science*, 19 (1970), 195-196; W. Wilson, "Reciprocation and Other Techniques for Inducing Cooperation in the Prisoner's Dilemma Game," *Journal of Conflict Resolution*, 15 (1971), 167-195; M. Pilisuk, P. Skolnick, and E. Overstreet, "Predicting Cooperation From the Two Sexes in a Conflict Simulation," *Journal of Personality and Social Psychology*, 10 (1968), 35-43; and M. Pilisuk and P. Skolnick, "Inducing Trust: A Test of the Osgood Proposal," *Journal of Personality and Social Psychology*, 8 (1968), 121-133.

[12] V. Sermat, "The Effect of an Initial Cooperative or Competitive Treatment Upon a Subject's Response to Conditional Cooperation," *Behavioral Science*, 12 (1967), 301-313; and Crumbaugh and Evans.

[13] V. E. Bixenstine and J. W. Gaebelein, "Strategies of 'Real' Opponents in Eliciting Cooperative Choice in a Prisoner's Dilemma Game," *Journal of Conflict Resolution*, 15 (1971), 157-166.

[14] A. Scodel, "Induced Collaboration in Some Non-Zero-Sum Games," *Journal of Conflict Resolution*, 6 (1962), 335-340; and Amnon Rapoport and A. Mowshowitz, "Experimental Studies of Stochastic Models for the Prisoner's Dilemma," *Behavioral Science*, 11 (1966), 444-458.

ceded by a high level of cooperation.[15] An abrupt shift from a high percentage of competitive choices to a high percentage of cooperative choices induces more cooperative behavior than does an abrupt shift from a high percentage of cooperative choices to a high percentage of competitive choices,[16] although Komorita and Mechling found contradictory evidence, and Swingle and Coady found no significant differences among conditions which included shifts toward more or less cooperation, although variability of the subjects' choices did increase.[17] Teger, in an attempt to reconcile these diverse findings, conducted an experiment in which he varied the size of the hostile act that either did or did not follow a series of cooperative responses by an opponent. The results indicated that a hostile act which is preceded by cooperation appears more hostile and evokes greater retaliation than when the hostile act is not preceded by cooperation. In addition, the size of the hostile act following cooperation makes a difference; the retaliation was decreased somewhat when the hostile act was small.[18]

Swingle found that a subject's reaction to a shift in strategy by an opponent is a function of his initial competitiveness. Highly cooperative subjects retaliated against the opponent's defection immediately and severely while highly competitive subjects showed a tendency to become more cooperative following the opponent's shift to increased competition.[19] McClintock, Gallo, and Harrison found that subjects who were "internationalists" were responsive to variations in an opponent's strategy but political "isolationists" were not.[20] Swingle and Gillis found that subjects were influenced more by abrupt changes in strategy by liked others than by disliked others.[21]

There are several post hoc explanations for these findings. It has been suggested that initial competitiveness communicates a willingness to be competitive which deters future competitive behavior on the part of subjects after a switch towards cooperation has taken place. From a learning point of view the initial period of competition, which generally leads to mutual competition, may give the subject a chance to learn that the competitive behavior is a very possible but punishing outcome. Early cooperative behavior, on the other hand, gives the subject a chance to learn that competitive behavior can be highly rewarding, a lesson he must unlearn if mutual cooperation is ever to be achieved. Finally, Kelley notes that there is a tendency to attribute to oneself those actions of another that are consistent with one's own interests. He writes that a possible explanation for the findings that an increase in cooperation results in more cooperation than does consistently high

[15] T. Hartford and L. Solomon, "'Reformed Sinner' and 'Lapsed Saint' Strategies in the Prisoner's Dilemma Game," *Journal of Conflict Resolution*, 11 (1967), 104-109; and W. Wilson, "Reciprocation."

[16] Bixenstine and Wilson, "Cooperative Choice —Part II"; P. G. Swingle, "Effects of Prior Exposure to Cooperative or Competitive Treatment Upon Subject's Responding in the Prisoner's Dilemma," *Journal of Personality and Social Psychology*, 10 (1968), 44-52; and Oskamp.

[17] S. S. Komorita and J. Mechling, "Betrayal and Reconciliation in a Two-Person Game," *Journal of Personality and Social Psychology*, 6 (1967), 349-353; and P. G. Swingle and H. Coady, "Effects of the Partner's Abrupt Strategy Change Upon Subject's Responding in the Prisoner's Dilemma," *Journal of Personality and Social Psychology*, 5 (1967), 357-363.

[18] A. I. Teger, "The Effect of Early Cooperation on the Escalation of Conflict," *Journal of Experimental Social Psychology*, 6 (1970), 187-204.

[19] Swingle.

[20] C. G. McClintock, P. Gallo, and A. A. Harrison, "Some Effects of Variations in Other Strategy Upon Game Behavior," *Journal of Personality and Social Psychology*, 1 (1965), 319-325.

[21] P. G. Swingle and J. S. Gillis, "Effects of the Emotional Relationship Between Protagonists in the Prisoner's Dilemma," *Journal of Personality and Social Psychology*, 8 (1968), 160-165.

cooperative behavior may be that the subjects believe that their game behavior, not the intentions of the other, "caused" much of this change.[22]

It is apparent that no theoretical framework has been developed and tested to explain the above findings. Although the subjects are faced with abrupt changes in their opponent's behavior, which may signal a variety of intentions, there is no readily identifiable explanation for what the content of the message being communicated actually is.

Multi-Choice Games

The results of the research using multi-choice games, which allow a more precise and unambiguous communication of intentions, in general show a higher reciprocity of cooperation than is normally found in the two-choice situations. One set of studies has utilized an expanded PD game allowing each player a choice of six moves instead of the usual two; this permits the communication of degrees of cooperativeness and competitiveness. In addition, the opportunity to use a signaling device to communicate one's planned behavior before actually making a choice in the game has been varied. A matching strategy and a conciliatory strategy, in which the confederate was slightly more cooperative than was the subject, induced more cooperative behavior than was present in a control group consisting of pairs of subjects actually playing against each other.[23] When the signaling device was used with integrity, increases in cooperative behavior tended to follow; there is, however, a tendency to make deceptive use of the signaling of planned behavior which results in a decrease of trust and an increase in competitive behavior.[24] Pilisuk, Potter, Rapoport, and Winter found that in those pairs of subjects where both players had taken a substantial unilateral initiative towards cooperative behavior at some point early in the course of play a prognosis for mutual cooperation was good.[25]

Wilson and Bixenstine added a third choice in the PD game which allowed a player to communicate a desire to cooperate without suffering excessive loss to himself or excessive gain to his opponent.[26] Their data do not show any appreciable increase in the number of joint cooperative responses as a result of having this alternative. Komorita, Sheposh, and Braver found that the use of a third choice in the PD game to communicate "I'll cooperate if you will and we will both profit equally, but if you do not cooperate, I will punish you," induced more cooperative behavior than did the use of a third choice to communicate "I have the advantage and I intend to use it to the utmost," or "I will not use my power over you."[27]

Deutsch, Epstein, Canavan, and Gumpert used a more complicated bargaining game in which a variety of choices were available to players. Their experiment demonstrates that neither a punitive nor a rewarding response to noncooperative behavior is more effective in eliciting mutually rewarding cooperation. Rewarding noncooperative behavior leads

22 H. H. Kelley, "Attribution in Social Interaction" (General Learning Press, 1971).

23 Pilisuk and Skolnick.

24 Pilisuk and Skolnick; and M. Pilisuk, J. A. Winter, R. Chapman, and N. Haas, "Honesty, Deceit, and Timing in the Display of Intentions," *Behavioral Science*, 12 (1967), 205-215.

25 M. Pilisuk, P. Potter, Anatol Rapoport, and J. A. Winter, "War Hawks and Peace Doves: Alternate Resolutions of Experimental Conflicts," *Journal of Conflict Resolution*, 9 (1965), 491-508.

26 K. V. Wilson and V. E. Bixenstine, "Effects of a Third Choice on Behavior in a Prisoner's Dilemma Game," Nebraska Psychiatric Institute and Kent State University, 1962. (Mimeographed.)

27 S. S. Komorita, J. P. Sheposh, and S. L. Braver, "Power, the Use of Power, and Cooperative Choice in a Two-Person Game," *Journal of Personality and Social Psychology*, 8 (1968), 134-142.

to exploitation unless it has been preceded by a convincing display of aggressive potential. Punishing noncooperative behavior makes it difficult for a subject to perceive cooperative intent, for the threatening and aggressive nature of the behavior designed to deter noncooperation interferes with that perception. A strategy which does not reciprocate hostility but nevertheless does not allow it to be rewarding seems to be effective in eliciting cooperative behavior so long as it is also generously responsive to the other's cooperative behavior.[28]

Summary

The findings of these studies can be explained post hoc as supporting the propositions that a message which is responsive to the other person's messages will have more impact than will a nonresponsive message, serial redundancy is helpful in inducing cooperative behavior, dramatic switches in behavior may increase the impact and effectiveness of a message, and messages which unambiguously communicate intentions are more effective than messages which are ambiguous about intentions.

STUDIES ALLOWING COMMUNICATION THROUGH GAME BEHAVIOR AND WORDED MESSAGES

A number of studies have operationalized communication by providing the dual channels of game behavior and worded messages. The worded messages have consisted of prepared notes a subject could send, the opportunity to write notes of any sort to the opponent, talking to the opponent on a telephone linkage which distorted voice tone and inflection, or using experimental apparatus in ways which could indicate one of a number of possible worded messages. The findings of the studies can be discussed and summarized under three broad areas: (1) the presence vs. absence of communication channels, (2) the content of the messages sent, and (3) situational variables.

Presence vs. Absence of Communication Channels

There is a great deal of evidence that the presence of a channel in which worded messages can be sent and exchanged, contrasted with the absence of such a channel, clearly increases the amount of cooperative behavior found in bargaining games.[29] Swensson, however, conducted a study which did not find significantly more cooperative behavior in conditions allowing for the exchange of worded messages contrasted with a condition allowing only for communication by game behavior.[30] Shure,

[28] M. Deutsch, Y. Epstein, D. Canavan, and P. Gumpert, "Strategies of Inducing Cooperation: An Experimental Study," *Journal of Conflict Resolution*, 11 (1967), 345-360.

[29] M. Deutsch, "Trust and Suspicion," *Journal of Conflict Resolution*, 2 (1958), 265-279; "The Effect of Motivational Orientation Upon Trust and Suspicion," *Human Relations*, 13 (1960), 123-139; J. L. Loomis, "Communication, the Development of Trust, and Cooperative Behavior," *Human Relations*, 12 (1959), 305-315; M. Deutsch and R. M. Krauss, "Studies of Interpersonal Bargaining," *Journal of Conflict Resolution*, 6 (1962), 52-76; G. Evans, "Effect of Unilateral Promise and Value of Rewards Upon Cooperation and Trust," *Journal of Abnormal and Social Psychology*, 69 (1964), 587-590; G. H. Shure, R. J. Meeker, and E. A. Hansford, "The Effectiveness of Pacifist Strategies in Bargaining Games," *Journal of Conflict Resolution*, 9 (1965), 106-117; R. Radlow and M. F. Weidner, "Unenforced Commitments in 'Cooperative' and 'Noncooperative' Non-Constant-Sum Games," *Journal of Conflict Resolution*, 10 (1966), 497-505; V. Daniels, "Communication, Incentive, and Structural Variables in Interpersonal Exchange and Negotiation," *Journal of Experimental Social Psychology*, 3 (1967), 47-74; K. W. Terhune, "Motives, Situation, and Interpersonal Conflict Within Prisoner's Dilemma," *Journal of Personality and Social Psychology*, Monograph Supplement, 8 (1968); and P. G. Swingle and A. Santi, "Communication in Non-Zero-Sum Games," *Journal of Personality and Social Psychology*, 23 (1972), 54-63.

[30] R. G. Swensson, "Cooperation in the Prisoner's Dilemma Game I: The Effects of Asymmetric Payoff Information and Explicit Communication," *Behavioral Science*, 12 (1967), 314-322.

Meeker, and Hansford found evidence that while worded messages produced more cooperative behavior in a limited number of subjects, "for many others their resolve to dominate was strengthened, or at least rationalized, by attributing trickery" to the message sender.[31] There is evidence that, while "anticipated opportunity" to exchange worded messages "enhanced initial cooperativeness in the PD game,"[32] bargainers who have the channel available "but do not make use of it to communicate either an appeal for cooperation or equity tend to be about as successful" in increasing the level of cooperative outcomes as pairs of bargainers who have the opportunity to communicate only through their game behavior.[33] The overall evidence indicates that the use of two channels (i.e., behavior in the bargaining game and worded messages) is clearly superior to the use of only the bargaining game behavior as a message to induce cooperative behavior. These findings support the notions that the greater the number of channels used the more effective a message will be in inducing cooperative behavior and that the greater the simultaneous and serial redundancy of messages aimed at inducing cooperative behavior the more effective they will be.

Message Content

As a message increasingly allows for expression of intentions, expectations, conditions of retaliation and reconciliation, and negotiation it will be more successful in inducing cooperative behavior.[34] Terhune found that the occurrence of messages which specifically reduced the ambiguity of intentions and expectations was correlated with amount of cooperative behavior.[35] Krauss and Deutsch conclude that messages intended to be fair and aimed at increasing the possibilities of cooperation are desirable in inducing cooperative behavior, a conclusion supported by Swingle and Santi.[36] Messages which emphasize reciprocity of choice, the desirability of cooperative choices, or threatened penalties for noncooperative choices are all effective in inducing cooperative behavior.[37] All these studies support the notion that the more information contained within messages indicating the sender's cooperative intentions and expectations and the ways in which cooperative behavior can be coordinated, the more effective the messages will be in inducing cooperative behavior.

Situational Variables

A variety of situational variables have been found to affect the level of cooperative behavior within the studies which have allowed communication through game behavior and worded messages. There is evidence that the greater the competitiveness of the situation, the less communication channels will be used or the more likely they will be used to deceive, threaten, or insult the opponent.[38] Krauss and Deutsch found that messages are more effective in inducing cooperative behavior if they are introduced after the bargainers have experienced the destructive effects of mutual

31 Shure et al., 114.

32 Swingle and Santi, 54.

33 Swingle and Santi, 61; and Deutsch and Krauss, "Studies of Interpersonal Bargaining."

34 Loomis; Evans; Shure et al.; Radlow and Weidner; Daniels; and Swingle and Santi.

35 Terhune.

36 R. M. Krauss and M. Deutsch, "Communication in Interpersonal Bargaining," *Journal of Personality and Social Psychology*, 4 (1966), 572-577; and Swingle and Santi.

37 Radlow and Weidner.

38 Deutsch, "Trust and Suspicion" (1958); Deutsch and Krauss, "Studies of Interpersonal Bargaining"; Pilisuk et al., "Honesty, Deceit, and Timing"; Terhune; and D. Wallace and P. Rothaus, "Communication, Group Loyalty, and Trust in PD Game," *Journal of Conflict Resolution*, 13 (1969), 370-380.

competition.[39] Evans found that when a powerful third party (i.e., the experimenter) indicated that he would penalize anyone who used a communication channel to deceive the opponent, cooperation was enhanced;[40] Krauss and Deutsch found that when the experimenter set norms for how the communication channel should be used cooperation was facilitated.[41] Under competitive conditions, Shure, Meeker, and Hansford found that subjects thought the message sender was trying to deceive, trick, embarrass them or make them feel guilty.[42] There is some evidence that task complexity affects communication effectiveness; for very simple tasks which need to be completed in a short period of time the use of communication channels to exchange worded messages may interfere with task accomplishment.[43] Swensson and Terhune present some evidence that the sending of a message indicating that one will behave cooperatively may function as a commitment to do so, which increases cooperative behavior.[44] Making one's worded and behavioral messages congruent increases the probability of successfully inducing cooperative behavior.[45] A communicated commitment to be cooperative will carry more weight when the person has behaved in trustworthy ways in the past.[46]

[39] Krauss and Deutsch, "Communication in Interpersonal Bargaining."

[40] Evans.

[41] Krauss and Deutsch, "Communication in Interpersonal Bargaining."

[42] Shure et al.

[43] C. B. McConville and J. K. Hemphill, "Some Effects of Communication Restraints on Problem-Solving Behavior," *Journal of Social Psychology*, 69 (1966), 265-276.

[44] Swensson; and Terhune.

[45] J. P. Gahagan and J. T. Tedeschi, "Strategy and the Credibility of Promises in the Prisoner's Dilemma Game," *Journal of Conflict Resolution*, 12 (1968), 224-234; and J. Horai and J. T. Tedeschi, "Effects of Credibility and Magnitude of Punishment on Compliance to Threats," *Journal of Personality and Social Psychology*, 12 (1969), 164-169.

[46] Gahagan and Tedeschi.

STUDIES ALLOWING COMMUNICATION THROUGH GAME BEHAVIOR, WORDED MESSAGES, AND NONVERBAL MESSAGES

As different channels for the sending of messages become available, not only are a larger number of messages made available for simultaneous transmission, but possible different kinds of meanings are communicated. By being able to see each other, for example, the subjects are provided with a set of nonverbal messages that provide a context in which the explicit verbal messages become more reliable. In a normal two-person conversation the verbal components have been estimated to carry less than 35 percent of the social meaning of the situation[47] and, therefore, the presence of nonverbal messages is important in inducing cooperative behavior. We communicate by our manner of dress, physique, posture, body tension, facial expression, degree of eye contact, hand and body movements, tone of voice, continuities in speech such as rate, duration, inflections, nonfluencies, and pauses, spatial distance, and touch, as well as by words. By comparison with verbal language, however, nonverbal messages are limited, ambiguous, and difficult to interpret accurately.[48] Usually nonverbal messages communicate feelings, likings, and preferences in ways which reinforce or contradict verbal messages.

Communication Channels

The studies of communication channels in situations allowing game behavior, worded messages, and nonverbal messages can be divided into studies focusing upon the alternation of different channels and studies focusing upon the simultaneous use and comparison of

[47] Ray L. Birdwhistell, *Kinesics and Context: Essays on Body Motion Communication* (Philadelphia: Univ. of Pennsylvania Press, 1970), 157-158.

[48] Johnson, *Humanistic Social Psychology*.

different channels. There have been a series of studies in which the subjects play a bargaining game allowing only the game behavior as communication, then have an intermission in which the subjects could or could not communicate with each other face-to-face, and then further play the bargaining game with game behavior as the only means of communication. The results of these studies indicate that while very short time periods of unstructured, face-to-face communication do not increase cooperative behavior in a bargaining situation,[49] longer periods of unstructured, face-to-face communication do increase cooperative behavior.[50]

There is evidence that the simultaneous use of all verbal and nonverbal communication channels is characteristic of successful conflict management and resolution. Families which successfully manage conflict, for example, exchange information through verbal and nonverbal channels much more frequently than do families which are unsuccessful in managing conflict.[51] There are a variety of studies, furthermore, which deal with comparisons among behavioral, visual, auditory, and total nonverbal and verbal channels. There is evidence that the combination of game behavior and visual nonverbal cues induces more cooperative behavior than does game behavior alone,[52] the combination of game behavior, words, and voice tone and inflection induces more cooperative behavior than either game behavior or game behavior and visual nonverbal cues,[53] and the combination of game behavior, words, and all nonverbal cues induces more cooperative behavior than either game behavior, game behavior and notes, game behavior and visual nonverbal cues, or game behavior, words and voice tone inflections.[54] These studies are congruent with the findings of studies of persuasion, which have indicated that face-to-face communication is most effective in producing attitude and behavioral changes.[55] Thus the greater number of channels through which messages can be sent, the simultaneous redundancy provided by multi-channel communication, and the two-way interaction provided in face-to-face discussion, all increase the effectiveness and clarity of messages aimed at inducing cooperative behavior. It may be that the more channels used to send messages the less the ambiguity concerning the meaning and motivating intentions of the messages (given simultaneous redundancy). Visual nonverbal cues, for example, may

[49] A. Scodel, J. S. Minas, P. Ratoosh, and M. Lipetz, "Some Descriptive Aspects of Two-Person Non-Zero-Sum Games," *Journal of Conflict Resolution*, 3 (1959), 114-119.

[50] Anatol Rapoport, A. Chammah, J. Dwyer, and J. Gyr, "Three-Person Non-Zero-Sum Nonnegotiable Games, *Behavioral Science*, 7 (1962), 38-58; V. E. Bixenstine, C. A. Levitt, and K. V. Wilson, "Collaboration Among Six Persons in a Prisoner's Dilemma Game," *Journal of Conflict Resolution*, 10 (1966), 488-496; and V. E. Bixenstine and J. Douglas, "Effect of Psychopathology on Group Consensus and Cooperative Choice in a Six-Person Game, *Journal of Personality and Social Psychology*, 5 (1967), 32-37.

[51] V. M. Satir, *Conjoint Family Therapy: A Guide to Theory and Technique* (Palo Alto, Calif.: Science and Behavior Books, 1964); L. Navran, "Communication and Adjustment in Marriage," *Family Process*, 6 (1967), 173-184; and A. J. Ferreira and W. D. Winter, "Information Exchange and Silence in Normal and Abnormal Families," *Family Process*, 7 (1968), 251-276.

[52] H. Wichman, "Effects of Isolation and Communication on Cooperation in a Two-Person Game," *Journal of Personality and Social Psychology*, 16 (1970), 114-120; and J. W. Dorris, G. Gentry, and H. H. Kelley, "Effects Upon Bargaining of Modality of Interaction, Initial Degree of Conflict, and Initial Orientations," *Journal of Personality and Social Psychology*, in press.

[53] Wichman.

[54] D. S. Ellis, "An Analysis of the Differential Effects of Various Types and Degrees of Communication Opportunity on Conflict Between Groups," Diss. Purdue Univ. 1965; D. H. Smith, "Communication and Negotiation Outcome," *Journal of Communication*, 19 (1969), 248-256; and Wichman.

[55] E. Katz and P. F. Lazarsfeld, *Personal Influence: The Part Played by People in the Flow of Mass Communications* (Glencoe, Ill.: Free Press, 1955).

be the most ambiguous message and, while they do increase the probability of cooperative behavior, they are not as effective as more unambiguous words. The least ambiguous situation is when all the nonverbal cues, words, and game behavior indicate cooperative intent and information about cooperative behavior, and it is this situation which does reduce the most cooperative behavior.

Message Content

Effectiveness in inducing cooperative behavior increases as the messages contain explanations of how to behave cooperatively and a rationale for such behavior.[56] Appeals emphasizing the need for cooperation, the other's responsibility to engage in cooperative behavior, and a request for help in creating a cooperative situation are productive of cooperative behavior.[57] Indicating one's cooperative intentions by proposing compromises,[58] accurately paraphrasing the other's position and feelings,[59] inducing the other to role reverse by paraphrasing one's position and feelings,[60] and nonverbally expressing coldness or an abrupt switch from anger to warmth[61] all increase the probability of successfully inducing cooperative behavior. It is only when these factors are used competently, however, that they will be effective.[62] The similarity of connotative meanings of concepts and words relevant to the conflict is important in successful conflict management.[63]

Situational Variables

The ability to survey another's post-cooperative-agreement behavior is important if one is to honor his commitment to behave cooperatively.[64] It is evident that communication must take place under a promotive goal interdependent structure in which cooperation is necessary to achieve rewarding outcomes if communication is to facilitate cooperation.[65] The affective relationship of liking or friendship makes a difference in how bargaining is conducted and the type of agreements made.[66] Psychopathology of the individuals involved in the conflict seems to interfere with using communication to agree upon cooperative behavior, as individuals who have pathological tendencies tend to mistrust and violate such agreements.[67]

Conclusions

The review of research on communication in conflict situations evokes several criticisms which can be made con-

56 Ellis.

57 J. W. Dorris, "Reactions to Unconditional Cooperation: A Field Study Emphasizing Variables Neglected in Laboratory Research," *Journal of Personality and Social Psychology*, 22 (1972), 387-397.

58 Krauss and Deutsch, "Communication in Interpersonal Bargaining"; and D. W. Johnson, "Effects of Warmth of Interaction, Accuracy of Understanding, and the Proposal of Compromises on the Listener's Behavior," *Journal of Counseling Psychology*, 18 (1971), 207-216.

59 D. W. Johnson, "Use of Role Reversal in Intergroup Competition," *Journal of Personality and Social Psychology*, 7 (1967), 135-141; and "Warmth of Interaction, Accuracy of Understanding, and Compromises."

60 Johnson, "Use of Role Reversal in Intergroup Competition," (1967); and "Effectiveness of Role Reversal: Actor or Listener," *Psychological Reports*, 28 (1971), 275-282.

61 Johnson, "Warmth of Interaction, Accuracy of Understanding, and Compromises"; and "Effects of the Order of Expressing Warmth and Anger on the Actor and the Listener," *Journal of Counseling Psychology*, 18 (1971), 571-578.

62 D. W. Johnson, "The Use of Role-Reversal in Intergroup Competition," Diss. Columbia Univ. 1966; and "Use of Role Reversal" (1967).

63 M. Katz, "Agreement on Connotative Meaning in Marriage," *Family Process*, 4 (1965), 64-74; and H. C. Triandis, "Cognitive Similarity and Communication in a Dyad," *Human Relations*, 13 (1960), 175-183.

64 Bixenstine et al., "Collaboration."

65 M. Sherif, *In Common Predicament: Social Psychology of Intergroup Conflict and Cooperation*. International Series in the Behavioral Sciences, ed. J. E. Horrocks (Boston: Houghton Mifflin, 1966).

66 W. R. Morgan and J. Sawyer, "Bargaining, Expectations, and the Preference for Equality Over Equity," *Journal of Personality and Social Psychology*, 6 (1967), 139-149.

67 Bixenstine and Douglas.

cerning almost all of the research. The first criticism focuses on the lack of conceptualization of conflict and communication. Often the most superficial conceptual definition is given for conflict and often no conceptual definition at all is given for comunication. There have been instances where a standard operational definition has provided an area with some momentum, as with the IQ test and the F-Scale, but in general productive research depends upon adequate conceptualization of the concepts being investigated. Without adequate conceptualization it is difficult to build theoretical models to organize and stimulate research. Concepts determine the behavioral field observed, affecting the principles derived from the observations, which in turn affect the hypotheses, laws, and theories constructed. Without clarification of the concept "communication," no theory of effective communication in conflict situations can be built.

The second general criticism is the lack of theorizing to test significant hypotheses. Although many of the studies find reliable relationships among variables they do not demonstrate the conditions under which such relationships are strongest or the reasons why such relationships exist. A variety of post hoc explanations are presented to explain the results of individual studies, but a fantastic lack of actual theory is being tested. The value of research is to promote theoretical advances in the area under study. The relationship between theory and research is complementary; theory is not useful unless it is empirically verified by research, and research is not useful unless it is related to theory. It is their relationship to theory which gives research findings their significance; research findings which have no relation to theory are trivial. From this point of view almost all research conducted on communication in conflict situations is trivial and of no significance as yet. Although there are numerous studies in the area, the lack of theory leaves the research findings unorganized, undirected, unexplainable, and unimportant.

Two major criticisms can be made about how communication has been operationalized in conflict research. First, the operational definitions used for communication have been inadequate in clarifying the concept of communication. When studying an inexact, complex concept such as communication the operational definitions should explicate communication into a concept which can be more precisely specified in order to make future research more theoretically significant. This has not been done in the conflict research. Second, the operationalizations of communication have been unproductive in advancing theory. The purpose of an operational definition is to serve as an index of a concept which is related to other concepts within a theory. Operational definitions serve the purpose of defining or partially defining theoretical concepts in terms of observable data in order to test the empirical validity of a theory. The lack of conceptualization of communication and the inadequacy of the operational definitions used combine to make most of the research in this area unproductive in advancing theory.

A fourth general criticism is that the dependent variable most often used is the quantity of cooperative behavior in the conflict situation. It is doubtful whether this is the most appropriate dependent variable to use. There is a large gap between accurately receiving a cooperative message and deciding to respond with cooperative behavior.

Research on communication in conflict situations has by and large ignored the theoretical literature in communication. This results in misdirected research which is irrelevant to current communi-

cation theory, repeats work that has already been done, and results in dubious assumptions about the communication process, all of which may invalidate much of the research which has been conducted.

Finally, there is frequently an unbridged gap between the results found by researchers and the application of the findings to other conflict situations. The social importance of this area makes it imperative that research be conducted to validate communication procedures which can be used in actual interpersonal and intergroup conflicts.

The research findings reviewed can be used as evidence that a variety of message and channel characteristics, situational variables, and communication procedures are effective in inducing cooperative behavior in a conflict situation. Yet most of the research reviewed is only of limited value for validating theory as only post hoc explanations of the results can be presented. Most of the research reviewed has not contributed significantly to an understanding of the conditions under which certain types of messages sent through certain types of channels in the context of certain situational variables will be received in such a way as to influence the decision to respond cooperatively. Future research in this important area should be characterized by the testing of theoretically based hypotheses drawn from models of the communication process which include concepts that readily lend themselves to clarification and explication through operationalization. Most of the research reviewed here has used communication variables as independent variables; in the future it may be fruitful to investigate the conditions under which cooperatively oriented messages will be sent to an opponent. Finally, more time and effort should be spent on validating procedures of effectively communicating within a variety of interpersonal and intergroup conflicts.

SPECIAL REPORTS

OPPORTUNITY TO COMMUNICATE AND SOCIAL ORIENTATION IN IMAGINARY-REWARD BARGAINING

JAMES G. GREENWOOD

GENERALLY, the assumption is made in the traditional approach to argumentation and bargaining that communication is always of value in conflict resolution. The task has been defined as prescribing the most effective means of communicating. This study approaches conflict resolution in a descriptive rather than a prescriptive way and tests the assumption that communication has inherent value in conflict resolution.

Surprisingly negative results have occurred in some bargaining studies comparing the presence and absence of opportunity to communicate. Deutsch and Krauss, Wandell, and Scodel et al., reported little or no improvement in the performance of subjects who were permitted explicit communication compared with subjects who were not allowed to communicate.[1] Communication actually led to lower levels of cooperation in the first two studies. In studies by Daniels and by Swensson, subjects with the opportunity to communicate tended to perform more successfully than subjects without that opportunity, although differences did not reach the .05 level of significance.[2]

However, those studies focusing on the content of messages rather than on the mere opportunity to communicate present a different picture. Krauss and Deutsch, and Loomis reported statistically significant improvement when subjects were tutored to engage in fair bargaining or when subjects increased the completeness of their messages by including statements of expectation, intention, retaliation, and absolution.[3] But Swensson failed to find a difference in the effects of three messages with differing affective tones.[4]

Varying social orientation, Deutsch found subjects with a cooperative orientation behaved cooperatively in a prisoner's dilemma significantly more frequently than did subjects with an individualistic or competitive orientation. Further, subjects who were allowed to communicate tended to cooperate more frequently than did those without the opportunity to communicate, although significant differences attributable to opportunity to communicate occurred only for subjects with an individualistic orientation.[5]

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[1] Morton Deutsch and Robert M. Krauss, "Studies of Interpersonal Bargaining," *Journal of Conflict Resolution*, 6 (1962), 52-76; William Allen Wandell, "Group Membership and Communication in a Prisoner's Dilemma Setting," Diss. University of Houston 1967; Alvin Scodel, J. Sayer Minas, Philburn Ratoosh, and Milton Lipetz, "Some Descriptive Aspects of Two-Person Non-Zero-Sum Games," *Journal of Conflict Resolution*, 3 (1959), 114-119.

[2] Victor Daniels, "Communication, Incentive, and Structural Variables in Interpersonal Exchange and Negotiation," *Journal of Experimental Social Psychology*, 3 (1967), 47-74; Richard G. Swensson, "Cooperation in the Prisoner's Dilemma Game I: The Effects of Asymmetric Payoff Information and Explicit Communication," *Behavioral Science*, 12 (1967), 314-322.

[3] Robert Krauss and Morton Deutsch, "Communication in Interpersonal Bargaining," *Journal of Personality and Social Psychology*, 4 (1966), 572-577; James L. Loomis, "Communication, the Development of Trust, and Cooperative Behavior," *Human Relations*, 12 (1959), 305-315.

[4] Swensson, 314-322.

[5] Morton Deutsch, "The Effect of Motiva-

The two variables manipulated in this study were social orientation and the opportunity to communicate. Two social orientations were used: (1) cooperative—each subject was led to feel that the welfare of the other person as well as his own welfare was important and that the other person felt the same way; and (2) competitive—each subject was led to feel that he wanted to do as well as he could for himself and also better than the other person and that the other person felt the same way.[6] Three levels of communication opportunity were employed: (1) unrestricted—both subjects could talk to the other as often as they wished; (2) moderate restriction—both subjects could talk to the other three times in each game; and (3) high restriction—both subjects could talk to the other only once in each game. Only the frequency of opportunity to communicate was controlled, not length of message nor type of message. The dependent variable was the number of "successful" bargains each pair of subjects concluded.

Two hypotheses were tested: (1) differences in the opportunity to communicate will affect the number of successes obtained in a simple bargaining setting; and (2) cooperative orientation and competitive orientation will affect the number of successes obtained.

Method

The game matrix developed to provide the essential features of bargaining is shown in Figure 1.[7] Player row can choose either row A or B and player column can choose column X, Y, or Z.

		Column		
		X	Y	Z
Row	A	$20,$3*	$1,$7	$0,$3
	B	$13,$3	$3,$13	$3,$0

*First figure in each cell is row's payoff.

Figure 1. Payoff Matrix

The cell intersecting row's choice and column's choice is the payoff, with row receiving the first number in the pair. A "successful" resolution of the conflict is defined as cell AX, the cell with the greatest total payoff. This is the best solution for both players since it pays a total of $23, or $7 more than the next best cell. If it is to be the best solution for column, however, partners must agree to redistribute the payoff; as originally distributed, column could not reasonably be expected to choose X, since his payoff would inevitably be higher in Y. Thus, without an agreement to redistribute, an AX combination must be considered an error attributable to a failure to understand the game.

With this matrix, both players should perceive the possibility of reaching an agreement in which each party would be better off than if no agreement is reached. Without an agreement to split the $23 in cell AX, the rational choice for column is Y. The rational choice for row, who realizes that column will choose Y, is A if row wishes to minimize the difference between himself and column. Otherwise, row's rational choice is B. Hence, either cell AY or cell BY can be considered rational in the absence of a redistribution agreement, depending on row's goals.

tional Orientation Upon Trust and Suspicion," *Human Relations*, 13 (1960), 123-139.

[6] The instructions to the subjects included a slight modification of the instructions Deutsch used to establish these orientations. See Deutsch, 123-139.

[7] A game matrix is an application of the theory of games of strategy which is enjoying increasing popularity with political scientists, economists, and the military. See, e.g., Thomas C. Schelling, *The Strategy of Conflict* (Cambridge: Harvard Univ. Press, 1960); Martin Shubik, ed., *Game Theory and Related Approaches to Social Behavior* (New York: Wiley, 1964); Anatol Rapoport, *Fights, Games, and Debates* (Ann Arbor: Univ. of Michigan Press, 1960).

Neither player has a disproportionate amount of power. Column is guaranteed a minimum of $7 in Y, so he is not forced to accept an "unfair" bargain in cell AX. Row controls $20 in cell AX. Therefore, he has sufficient wherewithal to make an enticing offer (at least better than $7) to column. Thus, both players would benefit from an arrangement distributing the lucre in cell AX.

Subjects, 84 volunteers from speech fundamentals classes at Northern Illinois University, were assigned to pairs, each pair playing a series of seven trials. Seven pairs of subjects were assigned to each of the six social orientation/communication restriction cells. Cooperatively oriented subjects always played with their like orientation, as did competitively oriented subjects.

Subjects were instructed that the payoff within any cell was subject to rearrangement if both players agreed to the new distribution. This provided the source of conflict and the subject matter for discussion between players. Any pair unable to reach a mutually acceptable redistribution submitted secret ballots, thus accepting as a payoff the intersection of row and column without a redistribution. All payoffs were imaginary, and subjects were so informed before playing.

Results

As Table 1 shows, main effects were found for both social orientation and communication opportunity. The interaction was not significant. The pattern of means (Table 2) indicates that successful bargaining is facilitated by a cooperative orientation and by increased opportunity to communicate. However, *t*-tests among pairs of cell means within orientation and communication conditions revealed only two differences significant beyond .05: among subjects with a competitive orientation, unrestricted communication results in significantly more successful bargains than does highly restricted communication; and, given unrestricted communication, a cooperative social orientation results in significantly more successful bargains than does a competitive orientation.

TABLE 1
Analysis of Variance Summary Table

Source	SS	df	MS	F
Rows (orientation)	50.38	1	50.38	15.13*
Columns (communication)	26.33	2	12.16	3.95*
Interaction	1.48	2	.74	.22
Error (within cells)	119.72	36	3.33	
Totals	197.91	41		

*Significant beyond .05 level.

TABLE 2
Mean Successes Per Treatment**

	Opportunity to Communicate			
	Unrestricted	Moderate Restriction	High Restriction	Combined
Orientation				
Competitive	2.71*†	2.00	1.14*	1.95
Cooperative	5.42†	3.86	3.14	4.14
Combined	4.06	2.93	2.14	

*Means with same sign differ beyond .05 level.
†Means with same sign differ beyond .05 level.
**Means were compared statistically only within orientation and communication levels.

AN EXPERIMENTAL VERIFICATION OF SCHELLING'S TACIT COMMUNICATION HYPOTHESIS

THOMAS E. HARRIS and ROBERT M. SMITH

SCHELLING isolates the concept "tacit communication," communication occurring via the common understandings of the two parties rather than by means of explicit messages sent through identifiable channels.[1] He asserts that such communication must occur to coordinate behavior whenever other messages are incomplete, difficult, unreliable, or nonexistent. Although one may argue that it is fairly obvious that "a great deal of communication goes on without any spoken or written statements being made,"[2] the nature and scope of this form of communication have not been carefully studied.[3]

Tacit communication depends on the saliency of certain cultural or situational features in a conflict or, for that matter, in any setting where explicit messages are not feasible. Bargains frequently can be struck without overt communication, simply by the tacit observation by both parties of some situational element that stands out in such a way that its mutual observation becomes likely. For example, two parties faced with the need to divide $100 without overt communication will almost always utilize a 50-50 split. A husband and wife accidentally separated in a department store normally manage to accomplish reunion without intercoms or paging systems simply by returning to their most frequented section of the store or going to the information booth. As Schelling says:

> The study of tacit bargaining—bargaining in which communication is incomplete or impossible—assumes importance . . . in connection with limited war, or, for that matter, with limited competition, jurisdictional maneuvers, jockeying in a traffic jam, or getting along with a neighbor that one does not speak to.[4]

In spite of the concept's importance,

> except for anecdotes and homely illustrations, we suddenly become aware that we have very little evidence: finished research that focuses systematically on historical cases of such phenomena as tacit bargaining.[5]

Three studies, besides Schelling's informal ones, have been conducted employing Tacit Communication Games (TCG). Willis and Joseph used TCG in continual play among various partner combinations and concluded that continual play tended to increase information but decrease coordination.[6] Solomon found that schizophrenics were less successful in TCG than were college students.[7] Fry found that success in TCG

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[1] Thomas C. Schelling, *The Strategy of Conflict* (Cambridge: Harvard Univ. Press, 1960).

[2] Michael Nicholson, *Conflict Analysis* (New York: Barnes and Noble, 1971), p. 3.

[3] James T. Tedeschi, "Threats and Promises," p. 160, and Bertram H. Raven and Arie W. Kruglanski, "Conflict and Power," p. 91, in *The Structure of Conflict*, ed. Paul Swingle (New York: Academic Press, 1970).

[4] Schelling, p. 53.

[5] Charles A. McClelland, "The Reorientation of the Sociology of Conflict: A Review," rev. of *The Strategy of Conflict*, by Thomas C. Schelling, and *Conflict and Defense: A General Theory*, by Kenneth E. Boulding, *Journal of Conflict Resolution*, 6 (1962), 92.

[6] Richard H. Willis and Myron L. Joseph, "Bargaining Behavior. I. 'Prominence' as a Predictor of the Outcome of Games of Agreement," *Journal of Conflict Resolution*, 3 (1959), 102-113.

[7] L. Solomon, "Schizophrenic Communica-

is partly a function of age, with the greatest success achieved by college students, followed by adolescents, followed by pre-adolescents.[8]

METHOD

Subjects were 74 undergraduates at a large university and 66 undergraduates at a small college. At both schools, subjects were randomly divided into two groups. Members of the "real partners" group were randomly assigned to dyads; members of the "hypothetical partners" group were told that they were playing with an imaginary partner similar to themselves. Instructions for all subjects were:

During the next fifteen to twenty minutes, we will be conducting an exercise in the form of a game designed to investigate one aspect of communication. This is not a test and each person's answers will be kept strictly confidential. Please refrain from talking during the exercise. As the instructions I am about to hand you make clear, this is a game of coordination and you can win only if you and your partner are able to coordinate your answers. Please read the instructions carefully. After completing the first page, you may ask questions concerning the procedure.

Each copy of the TCG contained general instructions explaining the concept of coordination as an exercise in nonverbal communication. The "real partners" group was also asked to indicate on a seven-level scale the amount of prior interaction they had had with their randomly assigned partners. As a sample test to familiarize subjects with the TCG, the following example was used: "Name 'heads' or 'tails.' If you and your partner name the same side, you both win a prize." The vast majority picked heads and apparently understood the importance of coordinated behavior for winning the game.

FIGURE 1.
Tacit Communication Game

1. Circle one of the numbers listed below. You win if you and your partner succeed in circling the same number.

7 100 13 261 99 555

2. Put a check mark in one of the 12 boxes (☐). You win if you and your partner both succeed in checking the same box.

☐ ☐ ☐ ☐
☐ ☐ ☐ ☐
☐ ☐ ☐ ☐

3. Circle one of the amounts of money listed below. You win if you and your partner succeed in circling the same amount of money.

$10 $64,000 $10,000 $1,000,000 $64 $8000

4. You are to meet your partner at Grand Central Station in New York City, but you and your partner do not know the hour of the meeting. You have no prior understanding with your partner on when to meet and you cannot communicate with each other. You both must guess the exact minute of the day for the meeting. At which of the times listed below will you appear for the meeting? Circle one.

9:30 a.m. 3:00 p.m. 12:00 noon 5:00 p.m. 10.00 a.m.
1:00 p.m. 9:00 a.m. 2:00 p.m.

5. You and your partner are each to pick one of five letters: K, G, W, L, or R. If you pick the same letter, you win; if you pick different letters, you get nothing. The prize you get depends on the letter you both pick; but the prizes are not the same for each of you, and the letter that would yield you the highest prize may or may not be his most profitable letter. For you the prizes would be as follows: K = 4; G = 3; W = 1; L = 2; R = 5.

You have no idea what his schedule of prizes looks like. You begin by proposing to him the letter R—that being your best letter. Before he can reply, the master of ceremonies intervenes to say that you were not supposed to be allowed to communicate and that any further communication will disqualify you both. You must simply circle one of the letters below, hoping that the other chooses the same letter. Which letter do you pick?

K G W L R

6. You and your partner are each given a piece of paper, one of which is blank and the other with an "X" written on it. The one who gets

tion: Experimental Studies in Tacit Coordination," paper read at Eastern Psychological Association, New York, April 1960.

[8] Charles L. Fry, "A Developmental Examination of Performance in a Tacit Coordination Game Situation," *Journal of Personality and Social Psychology*, 5 (1967), 227-281.

the "X" has the choice of leaving it alone or erasing it; the one who gets the blank sheet has the choice of leaving it blank or writing an "X" on it. If when you have made your choice, there is an "X" on only one of the sheets, the holder of the "X" gets $3.00 and the holder of the blank sheet gets $2.00. If both sheets have "X's" or both sheets are blank, neither gets anything. Your sheet of paper has the original "X" on it; do you leave it alone or erase it?

Check one:
leave "X" alone ——— erase the "X" ———

Six of the TCG exercises developed by Schelling were used. As Figure 1 indicates, the first four were entirely tests of cooperative behavior while the last two introduce a mixed-motive or bargaining situation where one player can win at the relative expense of the other.

Results

Schelling's predictions proved to be substantially correct. The answers he forecast were: (1) the first three numbers with 7, 100 and 13 in order of popularity; (2) upper left-hand corner; (3) $1,000,000 or some number to the power of ten (I tested against the first prediction); (4) twelve noon; (5) R; and (6) "X."

The "real partners" and "hypothetical partners" groups did not differ, and their results are reported together. Furthermore, in the "real partners" group no significant correlation was found between extent of coordination and reported previous interaction with partner.

Table 1 shows that extensive tacit communication occurred, with nine of twelve comparisons confirming Schelling's predictions via chi square tests. Two of the three comparisons that failed to verify the predictions involved students at the small college in the two mixed-motive exercises.

TABLE 1

CHI SQUARE RESULTS FOR CONFORMITY TO SCHELLING'S PREDICTIONS

Question	College	University
1	.00411*	.04793*
2	.00001*	.006*
3	.12908	.00424*
4	.00467*	.00093*
5	.12984	.01441*
6	.21198	.01330*

*Significant beyond .05 level.

The results underscore the importance of tacit communication in situations involving conflict. By understanding tacit variables, opponents are able to gain information about the other's present and future behavior. Such knowledge works both to enhance strategy and to avoid totally dysfunctional escalation.